Vol. 1016 Number 2

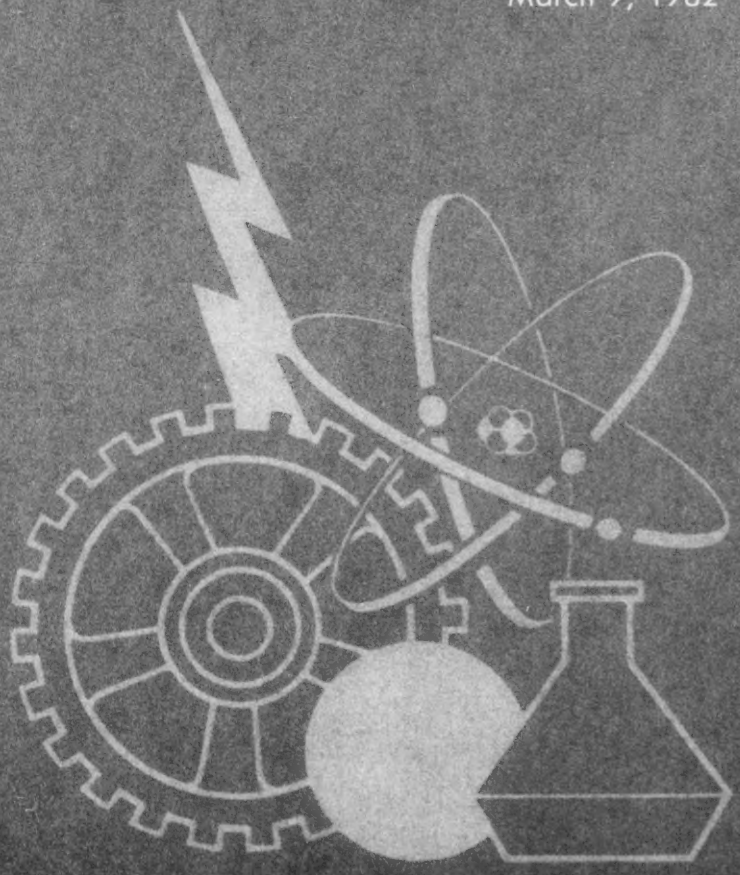
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

March 9, 1982



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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

March 9, 1982 Volume 1016 Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Jan. 19, 1982. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,178,539, Re. S.N. 326,580, Filed Dec. 2, 1981, Cl. 323/45, STEPPIN AC LINE VOLTAGE REGULATOR, Ronald L. Crapo, Owner of Record: *The Superior Electric Co., Bristol, Conn.,* Attorney or Agent: Paul S. Martin, Ex. Gp.: 212

4,181,888, Re. S.N. 334,308, Filed Dec. 24, 1981, Cl. 375/15, FEEDBACK NONLINEAR EQUALIZATION OF MODULATED DATA SIGNALS, David D. Falconer, Owner of Record: *Bell Telephone Laboratories, Inc., Murray Hill, N.J.,* Attorney or Agent: S. E. Hollander, et al., Ex. Gp.: 233

4,254,001, Re. S.N. 322,154, Filed Nov. 17, 1982, Cl. 260/22D, RANDOM ELASTOMERIC COPOLYESTERS, William C. T. Tung, Owner of Record: *The Goodyear Tire & Rubber Co., Akron, Ohio,* Attorney or Agent: Richard H. Childress, et al., Ex. Gp.: 144 .

4,256,248, Re. S.N. 329,944, Filed Dec. 11, 1981, Cl. 226/118, APPARATUS AND METHOD FOR FEEDING AND COLLECTING CONTINUOUS WEB MATERIAL, James F. Lapp, et al., Owner of Record: *Acme Visible Records, Inc., Crozet, Va.,* Attorney or Agent: Willis H. Taylor, Jr., et al., Ex. Gp.: 242

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,436,777, Reexam. No. 90/000,143, Requested: Jan. 26, 1982, Cl. 9/342, DIVER'S JACKET AND BUOYANCY CONTROL DEVICE, Alden T. Greenwood, Owner of Record: *Under Sea Industries of Delaware, Inc., Compton, Calif.,* Attorney or Agent: None, Ex. Gp.: 315, Requester: Edmond T. Patnaude, Oak Brook Terrace, Ill.

3,777,341, Reexam. No. 90/000,149, Requested: Jan. 27, 1982, Cl. 407/77, CUTTING INSERT AND CUTTING TOOL ASSEMBLY, Kurt Heinrich Albert Erich Faber, Owner of Record: *Sanvik Aktiebolag, Sandviken, Sweden,* Attorney or Agent: Ralph E. Parker, Ex. Gp.: 320, Requester: Sandvik Aktiebolag, Sandviken, Sweden

4,022,529, Reexam. No. 90/000,155, Requested: Feb. 8, 1982, Cl. 356/85, FEATURE EXTRACTION SYSTEM FOR EXTRACTING A PREDETERMINED FEATURE FROM A SIGNAL, John U. White, Owner of Record: *Inventor,* Attorney or Agent: Lee C. Robinson, Jr., Ex. Gp.: 250, Requester: The Perkin-Elmer Corp., Norwalk, Conn.

4,133,034, Reexam. No. 90/000,154, Requested: Feb. 4, 1982, Cl. 364/464, METHOD AND MEANS OF ASSIMILATING UTILITY METER DATA, Berwyn E. Etter, Owner of Record: *Inventor,* Attorney or Agent: Zarley McKee, et al., Ex. Gp.: 236, Requester: Anthony E. B. Goodfellow, Towcester, Northamptonshire, England

4,209,924, Reexam. No. 90/000,156, Requested: Feb. 8, 1982, Cl. 40/301, MARKING TAG, D. David Fearing, Owner of Record: *Fearing Manufacturing Co., Inc., S. St. Paul, Minn.,* Attorney or Agent: Jacobson & Johnson, Ex. Gp.: 333, Requester: Stanley W. Sokoloff & Ira M. Siegel, et al., Beverly Hills, Calif.

4,228,528, Reexam. No. 90/000,153, Requested: Feb. 3, 1982, Cl. 365/210, MEMORY WITH REDUNDANT ROWS AND COLUMNS, Ronald P. Cenker & Frank J. Procyk, Owner of Record: *Bell Telephone Laboratories, Inc., Murray Hill, N.J.,* Attorney or Agent: Arthur J. Torsiglieri, Ex. Gp.: 230, Requester: S. E. Hollander, Bell Labs, Inc., Murray Hill, N.J.

Notice of Application for Recordation of Trade Name "BRISTOL-MYERS COMPANY"

Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "BRISTOL-MYERS COMPANY," used by Bristol-Myers Co., a corporation organized under the laws of the State of Delaware, located at 345 Park Ave., New York, N.Y. 10154.

The application states that the trade name is used in connection with the following merchandise manufactured in numerous foreign countries: pharmaceuticals and medicines for human and veterinary use; vitamins, deodorants and oral hygiene preparations for human use; cosmetics and toiletries; medical appliances; small electrical appliances; and nutritional foods. Appropriate accompanying papers were submitted with the application.

Before final action is taken on the application, consideration will be given to any relevant data, views, or arguments submitted in writing by any person in opposition to the recordation of this trade name. Any such submission should be addressed to the Commissioner of Customs, Washington, D.C. 20229, in time to be received no later than 60 days from the date of publication of this notice in the Federal Register.

Notice of the action taken on the application for recordation of this trade name will be published in the Federal Register.

DONALD W. LEWIS,
Jan. 28, 1982. *Director, Entry, Procedures and Penalties Division.*

PATENT NOTICES

Certificates of Correction for the Week of March 9, 1982

Re. 30,770	4,283,806	4,297,969	4,301,699
Re. 30,814	4,284,169	4,298,155	4,301,878
3,860,600	4,284,584	4,298,265	4,301,964
3,876,660	4,285,475	4,298,281	4,301,989
3,897,433	4,285,956	4,298,551	4,302,018
3,959,693	4,286,183	4,298,598	4,302,171
4,023,086	4,286,808	4,298,711	4,302,243
4,049,575	4,287,080	4,298,759	4,302,511
4,122,895	4,287,884	4,298,911	4,302,662
4,225,382	4,288,370	4,299,320	4,302,731
4,241,397	4,288,436	4,299,327	4,302,911
4,243,518	4,289,650	4,299,374	4,302,949
4,244,969	4,292,092	4,299,482	4,303,785
4,248,295	4,292,153	4,299,657	4,303,987
4,252,335	4,292,277	4,299,746	4,305,400
4,256,499	4,292,419	4,299,887	4,305,671
4,261,025	4,292,900	4,300,229	4,306,136
4,262,874	4,293,435	4,300,513	4,306,143
4,270,518	4,293,481	4,300,626	4,306,532
4,272,430	4,293,569	4,300,703	4,306,567
4,273,560	4,293,697	4,300,864	4,306,835
4,273,592	4,295,552	4,301,132	4,308,293
4,278,800	4,296,364	4,301,174	4,308,322
4,280,895	4,296,429	4,301,292	4,308,573
4,280,896	4,296,715	4,301,326	4,308,746
4,281,298	4,296,723	4,301,349	4,309,118
4,281,905	4,297,554	4,301,427	
4,282,516	4,297,795	4,301,657	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 222
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF February 6, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-18-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-04-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	11-19-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-24-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-29-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	7-03-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	3-24-80
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-02-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	4-14-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-27-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-25-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	3-31-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	5-30-80

Expiration of patents: The patents within the range of numbers indicated below expire during February 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,167,778 to 3,171,130, inclusive

Plant Patents ..... Numbers 2,468 to 2,485 inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

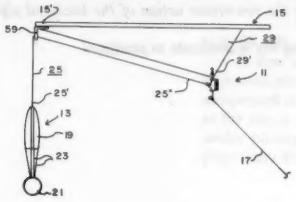
Re. 30,877
MECHANISM FOR RELEASABLY ATTACHING AN OBJECT TO A KITE

James M. Segerson, 6871 Meadowbrook, Olive Branch, Miss. 38654, and Bert G. Clawson, 983 McClure, Memphis, Tenn. 38116

Original No. 4,194,709, dated Mar. 25, 1980, Ser. No. 951,781, Oct. 16, 1978. Application for reissue Jun. 23, 1980, Ser. No. 162,365

Int. Cl.³ B64C *31/06*

U.S. Cl. 244—155 R **8 Claims**



8. A mechanism for releasably attaching an object to a kite to be carried aloft by the kite and to be released while the kite is in flight when the flight string of the kite is given slack, said mechanism comprising: a means for being pivotally attached to the kite and for being fixedly attached to the end of the flight string, said means including a keeper portion for selectively retaining the object to be carried aloft by the kite, said means having a first position in which said keeper portion will retain said object and having a second position in which said keeper portion will release said object, said means being held in said first position when the kite is aloft and the flight string is held substantially taut, said means moving to said second position when the kite is aloft and the flight string is given slack.

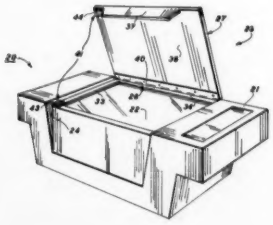
Re. 30,878
COPYING APPARATUS COVER

William G. Wakeman, San Jose, Calif., assignor to Pitney Bowes Inc., Stamford, Conn.

Original No. 4,150,896, dated Apr. 24, 1979, Ser. No. 868,094, Jan. 3, 1978. Application for reissue Apr. 6, 1981, Ser. No. 251,574

Int. Cl.³ G03B *27/62*

U.S. Cl. 355—75 **14 Claims**



9. A cover for copying apparatus having a housing and platen surface, comprising:

an L-shaped cover frame comprising two elongated arms, one arm being longitudinally pivotally mounted by a first hinge means to the housing structure, the other arm extending outwardly at an angle therefrom;

a rigid cover pivotally mounted by a second hinge means to the outwardly extending arm of the L-shaped cover frame; and

holding means for independently and releasably securing the rigid cover to the longitudinally pivotally mounted arm of the L-shaped cover frame and alternatively releasably securing the outwardly extending arm of the L-shaped cover frame to the copying apparatus surface, comprising easily attachable and detachable fasteners, thereby allowing selection of pivotal operation about either pivotal axis of the first hinge means or the second hinge means and eliminating any pivotal operation about the unselected axis.

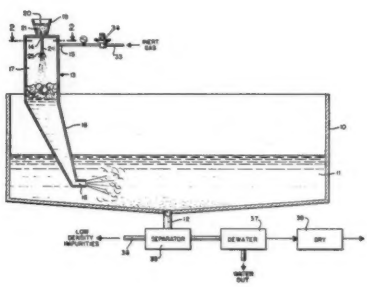
Re. 30,879
METHOD FOR PRODUCING LOW OXIDE METAL POWDERS

Maurice D. Ayers, Stamford, Conn., assignor to Metal Innovations, Inc., Stamford, Conn.

Original No. 3,646,176, dated Feb. 29, 1972, Ser. No. 855,096, Sep. 4, 1969. Continuation of Ser. No. 445,864, Feb. 26, 1974. Application for reissue Nov. 20, 1978, Ser. No. 962,373

Int. Cl.³ B01J *2/06*

U.S. Cl. 264—11 **10 Claims**



5. A method of atomizing molten iron or steel to a powder having irregular, angular particles predominantly of 40 to 325 mesh, and in which while normally oxidizable under water atomizing conditions, said formed metal powder contains less than 0.25 percent oxygen by weight, comprising:

(a) discharging a stream of molten iron or steel into an enclosed non-vented atomizing chamber having an open lower end,

(b) impinging upon said stream of molten metal in an atomizing zone of said enclosed chamber, a first stage of opposed thin flat, solid streams of water directed downwardly at an angle to the vertical under sufficient pressure to atomize said molten stream into said irregular particles,

(c) quenching immediately thereafter said formed particles by violently turbulent contact with water, including at least impinging upon said formed particles in a second stage immediately below said first stage, opposed high pressure jets of water, to quench by said violently turbulent contact with water, said formed particles to a temperature below which oxidation of said formed particles, occurs, to minimize the formation of surface films of steam and the exposure of said particles to said films,

(d) discharging atomizing and cooling water from the lower end of said atomizing chamber in a stream of smaller cross section than the cross section of the non-vented atomizing chamber in the region of the atomizing zone,

(e) the action of the high velocity water jets within said enclosed chamber effecting a partial evacuation of said chamber under normal operating conditions,

(f) maintaining the lower end of the atomizing chamber below the surface of a body of water,

(g) discharging the atomizing and cooling water, along with the atomized particles, into said body of water, and

(h) controlling and limiting the rise of water within the atomizing chamber, resulting from said partial evacuation, by controllably introducing into the upper portion of the chamber a non-oxidizing gas.

Re. 30,880

LOW D.E. STARCH CONVERSION PRODUCTS

Frederick C. Armbruster, La Grange, Ill., assignor to Grain Processing Corporation, Muscatine, Iowa

Original No. 3,560,343, dated Feb. 2, 1971, Ser. No. 625,584, Mar. 24, 1967. Application for reissue Jan. 29, 1973, Ser. No. 327,335

Int. Cl.[3] **C12P** *19/14*

U.S. Cl. 435—99 **17 Claims**

14. A process for producing a starch hydrolyzate which comprises:

(1) treating a starch water slurry with an acid above the gelatinization temperature of the starch to solubilize and hydrolyze the starch to a dextrose equivalent value no greater than about 15,

(2) treating the acid hydrolyzed starch with bacterial alpha-amylase to obtain a starch hydrolyzate product having a dextrose equivalent no greater than about 25,

(3) stopping the conversion action of the bacterial alpha-amylase, and

(4) recovering the hydrolyzate so produced.

PLANT PATENTS

GRANTED MARCH 9, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,829

CHRYSANTHEMUM NAMED ROCKET

Leonard H. Shoesmith, Westfield-Woking, England, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Jul. 18, 1980, Ser. No. 170,006

Int. Cl.[3] **A01H** *5/00*

U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct chrysanthemum cultivar substantially as herein shown and described, particularly characterized in uniqueness as a garden variety for early Fall blooming, as well as for use as a plant for year-around four inch pot production under photoperiod control, and by its profuse production of pink daisy-like flowers having bright yellow centers.

PLANT PATENTS

ORANTED MARCH 9, 1982

PATENTS

GRANTED MAR. 9, 1982

ERRATA

For CLASS	See PATENT NO.
114–344	4,318,196
297–445	4,318,556
264–046	4,318,761
376–253	4,318,775
376–254	4,318,776
376–253	4,318,777
376–216	4,318,778
523–402	4,318,832
524–457	4,318,833
524–457	4,318,834
264–036	4,318,835
524–141	4,318,836
524–364	4,318,837
524–444	4,318,838
524–538	4,318,839
523–144	4,318,840
524–605	4,318,841
524–605	4,318,842
523–212	4,318,843
524–212	4,318,844
524–091	4,318,845
372–058	4,319,201
372–083	4,319,202
372–030	4,319,203
360–106	4,319,354

PATENTS

GRANTED MAR. 8, 1983

PATENTS

GRANTED MARCH 9, 1982

GENERAL AND MECHANICAL

4,318,189

SIMULATED KNOTTED NECKTIE

Franklin S. Intengan, 666 W. 81st St., Apt. W-122, Hialeah, Fla. 33014

Filed May 5, 1980, Ser. No. 146,638
Int. Cl.³ A41D *25/02*
U.S. Cl. 2—144 **4 Claims**

1. A simulated knotted necktie comprising:

a hollow knot-shaped definng body comprising,

a main face,

a rear face having a first hole centrally arranged and having a lower lip,

a bottom face with a hole, and

a top face, and

generally upwardly diverging side walls, each having an opening adjacent the juncture of eac side wall and the top fan;

a necktie length comprising,

a display tail having a display face and a rear face,

a rear tail with a tip end, and

a neck loop length between the tails;

said neck loop length extending from said body openings, said rear tail extending from said bottom hole, and said display tail extending from said rear face hole with said rear face of said display tail overlaying said body top face and main face and extending away from said body; and

keeper means to hold said display tail in snug jacketing relation of said body main face defining a simulated knot zone at said body.

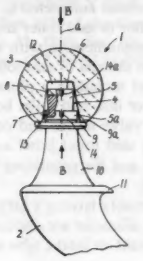
4,318,190

METAL-INFIBULUM CERAMIC-HEAD ENDOPROSTHESIS

Sergio S. Cortesi, Via Guglielmini, 6, Bologna, Italy

Filed Sep. 5, 1979, Ser. No. 72,802
Int. Cl.³ A61F *1/24*
U.S. Cl. 3—1.913 **3 Claims**

1. In a hipbone endoprosthesis comprising a metallic endomedullar infibulum insertable into the medullar channel of the femur, following removal of the femur epiphysis and having a portion protruding from said channel, and a spherical head made of a ceramic material, having a frustoconical cavity and force fit associable with said protruding portion, wherein the improvement comprises said protruding portion comprises a substantially cylindrical shank having a pair of axially extending annular ridges, said annular ridges having a saw-tooth cross-section with an outer substantially cylindrical surface and an inner conical surface widening towards the protuding



end of said shank, said ridges having edges lying in a conical surface complementary to said cavity.

4,318,191

COMPLIANT HEAD FEMORAL ENDOPROSTHESIS

Slobodan Tepic, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 13, 1980, Ser. No. 177,657
Int. Cl.³ A61F *1/24*
U.S. Cl. 3—1.913 **3 Claims**

1. An endoprosthesis comprising a stem adapted to be secured to a thigh bone, a femoral head construction secured to said stem and adapted to fit into the acetabulum of a hip joint, said femoral head construction comprising an upper femoral head portion having an outside generally spherical shape, a compliant metal shell secured to and spaced away from said upper femoral head portion in order to cover said generally spherical surface, said compliant shell being spaced apart from said spherical surface at a distance to permit said compliant shell to flex within said acetabulum without exceeding its elastic limit.

4,318,192

VENTILATED TOILET

Jack D. Williams, P.O. Box 198, Gold Bar, Wash. 98251, and Howard V. Banasky, 1401 N. 26th, Renton, Wash. 98055

Filed Oct. 31, 1979, Ser. No. 89,763
Int. Cl.³ E03D *9/04, 9/052*
U.S. Cl. 4—213 **11 Claims**

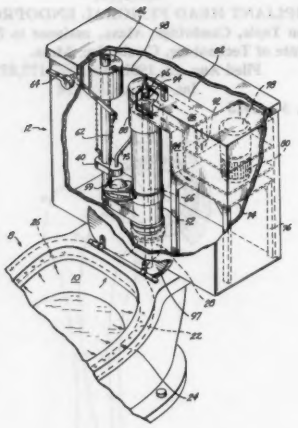
1. A ventilated toilet comprising:

a toilet stool and a toilet holding tank, said toilet stool having

therein a toilet bowl, said toilet bowl being connected in fluid communication with a sewer discharge line by a waste discharge duct internal to said toilet stool, said waste discharge duct including a siphon portion interposed between said toilet bowl and said sewage discharge line, said toilet holding tank being positioned above and to the rear of said toilet bowl, said holding tank having a water discharge outlet connected in fluid communication with a feed conduit in said toilet stool, said feed conduit being in fluid communication with an annular water discharge channel in the rim of said toilet bowl, said annular discharge channel including a plurality of apertures for discharge of water into said toilet bowl;

fresh water intake valve means and cooperable valve float means for filling said toilet bowl and said holding tank with fresh water and for regulating the level of water in said holding tank;

a flapper valve assembly having a large diameter air intake tube and a small diameter air discharge tube enclosed in said intake tube, said air intake tube and said air discharge



tube each having first and second ends, said first end of said intake tube being connected in fluid communication to said water discharge outlet of said holding tank, said first end of said air discharge tube protruding downwardly through said first end of said air intake tube and through said discharge outlet of said holding tank and passing through said conduit in said toilet stool and opening into said siphon portion of said waste duct, said large diameter air intake tube further including a flapper valve adjacent said first end of said intake tube, said flapper valve being selectively operable to admit water from said holding tank into said air intake tube during a flushing cycle; and

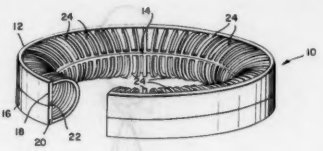
fan means operably connected to said second end of said air intake tube for withdrawing contaminated air from said toilet bowl through said annular discharge channel, said feed conduit and said air intake tube and pumping said contaminated air downwardly through said air discharge tube into said siphon portion of said waste duct for disposal through said sewer line.

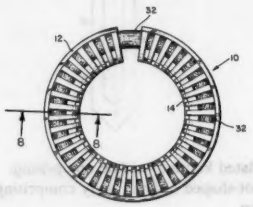
4,318,193

FLEXIBLE DEODORANT RING HOLDER

Alfred M. Bayer, 2160 Mt. Shasta Dr., San Pedro, Calif. 90732; Norman K. Faulkner, 4651 Northridge Dr., Los Angeles, Calif. 90043, and Christine Lasocki, 515 17th St., Huntington Beach, Calif. 92648

Filed Jun. 12, 1980, Ser. No. 158,724
Int. Cl.³ E03D 9/02
U.S. Cl. 4—222 **8 Claims**





1. A flexible holder having a changeable outside diameter for holding a solid non-flexible deodorant ring comprising:

a flexible arcuate outer rim section having a straight outer side forming the outside diameter of a deodorant holder adapted to fit into a sink drain thereby forming a flexible holder having a semi-circular cross-section,

a plurality of radially extending spaced-apart flexible rib members each attached to opposite portions of said straight outer side along the periphery of said rim section, and

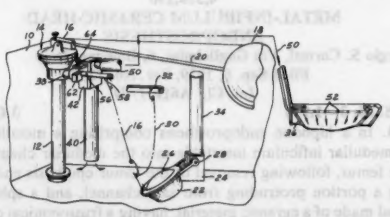
each of said rib members attached together by a flexible arcuate inner rim section forming the inside diameter of the deodorant holder.

4,318,194

WATER CLOSET DIVERTER VALVE

David L. Pinkston, Allen Park, Mich., assignor to Masco Corporation, Taylor, Mich.

Filed Oct. 27, 1980, Ser. No. 200,925
Int. Cl.³ E03D 1/36
U.S. Cl. 4—366 **7 Claims**



1. In a water closet flushing apparatus including a supply tank, a water supply pipe connected to a source of water under pressure, a refill pipe and a float-controlled valve controlling the supply of water from said supply pipe to said refill pipe, a

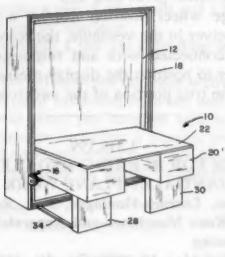
flush valve adapted to be manually opened to dump the water in said tank into the bowl for flushing the bowl, said bowl having a series of nozzles disposed around the rim of said bowl; the improvement comprising a diverter valve interposed in the connection between said float-controlled valve and said refill pipe, said diverter valve including a valve body having an inlet communicating with the outlet from said float-controlled valve, a first outlet communicating with said nozzles in said bowl and a second outlet leading to said refill pipe, a valve member in said valve body and movable therein between to close either of said outlets while opening the other and to an intermediate position in which both said outlets are open, means biasing said valve member toward a position closing said second outlet, and means connecting said diverter valve member and said flush valve whereby opening of said flush valve allows said biasing means to move said diverter valve member to close said second outlet, thereby opening said first outlet to discharge water under pressure from said supply pipe through said nozzles, and closing of said flush valve moves said diverter valve member against said biasing means toward a position closing said first outlet thereby opening said second outlet to refill said tank, said connecting means and said biasing means normally maintaining said diverter valve member in said intermediate position.

4,318,195

CONVERTIBLE FURNITURE UNIT

George S. Reppas, 1030 San Raymundo Rd., Hillsborough, Calif. 94010

Filed Feb. 26, 1980, Ser. No. 124,863
Int. Cl.[3] A47B *85/00*
U.S. Cl. 5—2 R 6 Claims



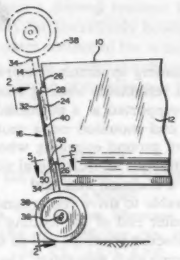
1. A convertible furniture unit comprising the combination of an upper platform for use as a bed or table, a lower platform, support means for mounting the upper platform for movement about a horizontal axis between an upright position and a prone position, the support means including an upstanding housing upon which the upper platform is pivotally mounted together with leg means upon which the lower platform is pivotally mounted, said upper platform being pivotally mounted with the lower platform in parallelogram linkage geometry with the leg means and housing for maintaining a horizontal orientation of the lower platform throughout its movement, said upper platform when in the prone position holding the bed or table horizontally for use in a first mode, said support means further mounting the lower platform for movement between a raised position for use in a second mode when the upper platform is upright and a lower position when the upper platform is prone, with the points of pivotal connection between the upper and lower platforms and between the lower platform and leg means at an overcenter position with respect to the points of connection of the upper platform and leg means to the support means, respectively, in the second mode whereby the force of gravity holds the upper and lower platforms in the respective upright and raised positions, means for releasably locking the upper platform in its prone position, and actuating means for applying a yieldable force urging the upper platform toward its upright position whereby upon release of the locking means the yieldable force moves the upper platform toward the upright position, and whereby another force applied on the upper platform counter to the yieldable force moves it toward the prone position for engagement of the releasable lock.

4,318,196

WHEEL ASSEMBLY FOR BOATS

Ralph M. Eide, P.O. Box 1554, Lake Oswego, Oreg. 97034

Filed Mar. 31, 1980, Ser. No. 135,448
Int. Cl.[3] B63C *13/00*
U.S. Cl. 114—344 3 Claims

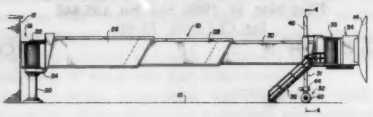


1. A wheel assembly for a boat comprising
(a) a support member having a base wall and parallel projecting side walls forming a channel shape,
(b) means on said support member arranged to secure it in upright position on the stern of a boat,
(c) said support member being open at its upper and lower ends and said side walls terminating in end edges,
(d) aligned notches in said end edges of the side walls at each end of said support member,
(e) a wheel strut having opposite end portions,
(f) wheel means on one end portion of said wheel strut,
(g) the other end portion of said wheel strut extending into said channel-shaped support member,
(h) transverse pivot means centrally located between the ends of said support member and connecting said other end portion of said wheel strut to said support member for pivotal movement of said wheel strut to up and down positions,
(i) a transverse latch pin supported on said wheel strut intermediate the end portions thereof,
(j) said latch pin being movable toward and away from said pivot means,
(k) and spring means in said support member connected to said latch pin arranged to urge the latch pin toward said pivot means,
(l) said latch pin being arranged when moved longitudinally of said support member against the action of said spring means to be received in one or the other of said end notches and held in locked relation therein by said spring means upon rotation of said wheel strut into an upper secured non-use position or a lowered secured use position,
(m) each of said end notches of said support member having a tapered cam edge portion leading into its notches from the front of the support member for engagement by said latch pin and automatically directing it into said notches,
(n) said latch pin extending through longitudinally elongated cross slots in said wheel strut to provide said movement thereof,
(o) said pin being of elongated dimension relative to the cross dimension of said wheel strut and support member so as to project beyond the sides to provide manual engagement in releasing said pin from said notch.

4,318,197
CONVEYANCE LOADER DRIVE AND STEERING SYSTEM

Otto Drozd, Hialeah, Fla., assignor to Wollard Aircraft Equipment, Inc., Miami, Fla.

Filed Nov. 21, 1979, Ser. No. 96,490
Int. Cl.³ E01D 1/00
U.S. Cl. 14—71.5 8 Claims

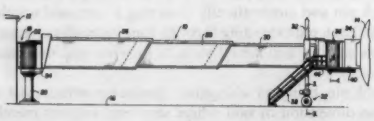


4. Conveyance loading apparatus comprising
an extensible and retractable loading ramp having an inner end pivotally supported at a positionally fixed structure and an outer end mounted on a mobile undercarriage having a pair of ground engaging wheels mounted, with one wheel contiguous to each lateral side of the ramp, for rotation about a common axis, and
drive means operable to drive the ground engaging wheels to move the outer end of the loading ramp between extended and retracted positions and to steer the outer end of the ramp during such movement, the drive means comprising,
a pair of hydraulic motors drivingly connected one to each of the pair of ground engaging wheels, the hydraulic motors each having an inlet and an outlet,
pump means for supplying hydraulic fluid under pressure to the pair of hydraulic motors,
hydraulic circuit means including conduit means connecting the pair of hydraulic motors in series to the pump means,
a first reversible, variable flow valve connected in the hydraulic circuit means and operable to control both the rate and direction of flow of hydraulic fluid from the pump means to the pair of series connected hydraulic motors,
a second reversible, variable flow valve connected in the hydraulic circuit means between the first valve and the pair of hydraulic motors, such second valve being operable to divide the flow of fluid from the first valve and to bypass only one of the hydraulic motors with a portion of such fluid whereby the series connected hydraulic motors can be driven at different rates to steer the outer end of the ramp during expansion and retraction movement,
a single actuator joy stick control lever for controlling both steering and driving rate of the outer end of the ramp, and
selsyn transmitter means operably connected to such control lever for actuation thereby, and selsyn receiver means operably connected to the selsyn transmitter means and to the first and second valves for operating the valves in response to actuation of such control lever.

4,318,198
CONVEYANCE LOADER WHEEL POSITION INDICATOR

Otto Drozd, Hialeah, Fla., assignor to Wollard Aircraft Equipment, Inc., Miami, Fla.

Filed Nov. 21, 1979, Ser. No. 96,569
Int. Cl.³ E01D 1/00
U.S. Cl. 14—71.5 12 Claims

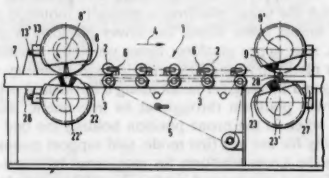


10. Conveyance loading structure comprising a longitudinally extensible and retractable conveyance loading ramp having a movable end supported on an undercarriage having an axle assembly mounting ground engaging wheels rotatable about a common axis,
pivot means supporting the axle assembly on the undercarriages for steering movement about a generally vertical pivot axis,
drive means connected with and operable to drive the ground engaging wheels,
a vestibule mounted on an articulated head at the movable end of the loading ramp for rotation about a generally vertical pivot axis laterally spaced from the pivot axis of the undercarriage axle assembly to position the vestibule for engaging and providing access to a conveyance, and
manually operated control means at an operator's station in the vestibule and operably connected with the drive means for controlling movement of the movable end of the loading ramp,
the control means including actuator means for controlling operation of the drive means to control driving movement of the wheels and steering movement of the axle assembly, undercarriage wheel position indicator means connected between the axle assembly and the vestibule, and compensator means responsive to rotary movement of the vestibule about its pivot axis and operatively connected between the wheel position display means in the vestibule and the wheel position detecting means to compensate for movement of the vestibule about its pivot axis,
such wheel position indicator means including
detecting means including a selsyn transmitter continuously determining the rotative position of the axle assembly about its vertical pivot axis, and
undercarriage wheel position display means including a selsyn receiver in the vestibule, the selsyn receiver being operably connected with and responsive to the selsyn transmitter to position the display means to continuously indicate the true position of the undercarriage wheels.

4,318,199
MACHINE FOR BURRING AND CLEANING OF SUBSTANTIALLY PLANE WORK PIECES

Wolfgang Kunz, Lörrach-Hauingen, Fed. Rep. of Germany, assignor to Kunz Maschinen-und Apparatebau GmbH, Fed. Rep. of Germany

Filed Mar. 18, 1980, Ser. No. 131,397
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 2911322
Int. Cl.³ A46B 13/02
U.S. Cl. 15—77 3 Claims



1. A machine for burring and cleaning of substantially plane work pieces having arbitrarily formed contours, openings and apertures comprising conveying means defining a substantially horizontal conveying direction for said work pieces and at least one upper rotary brush and one lower rotary brush, said brushes mounted on axes of rotation which are parallel in a substantially common vertical plane and spaced so as to engage opposed upper and lower surfaces of said work pieces and said brushes having groupings of bristles alternating with spacings along the radial direction of said brushes, said groupings of bristles of said upper brush being received between said spac-

ings of said lower brush defining an interlocking gear arrangement except when prevented by said work pieces.

4,318,200

WINDSHIELD WIPER

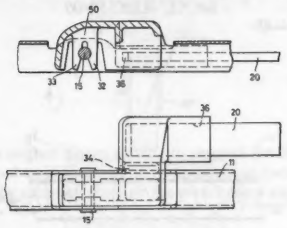
Kurt Bauer, Ingersheim; Wilhelm Dorr; Alfred Kohler, both of Bietigheim-Bissingen; Oldrich Krizek, Ingersheim, and Hans Prohaska, Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to ITT Industries Incorporated, New York, N.Y.

Division of Ser. No. 23,713, Mar. 26, 1979, Pat. No. 4,261,074. This application Dec. 12, 1980, Ser. No. 215,628

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812413

Int. Cl.³ B60S 1/40

U.S. Cl. 15—250.32 **13 Claims**



1. A windshield wiper comprising:

a wiper blade having a main yoke and a wiper element, said main yoke having a pair of side walls and a back wall, said back wall having an aperture;

a wiper arm including a portion extending laterally beside said wiper blade;

a pivot pin supported between said side walls;

a connecting element extending between said sidewalls and secured to said pivot pin between said side walls, said connecting element including a portion projecting from said main yoke and extending over one of said side walls, said portion including an adapter member for engaging said

wiper arm portion.

4,318,201

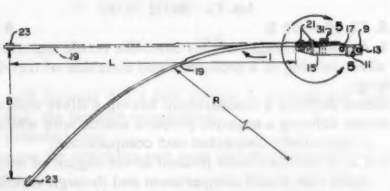
WINDSHIELD WIPER ARM

Gerald L. Rogers, and Ronald B. Schulte, both of St. Louis, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 2, 1980, Ser. No. 136,434

Int. Cl.³ B60S 1/34

U.S. Cl. 15—250.35 **5 Claims**



1. A windshield wiper arm assembly for use on a windshield having a curved outer surface, said assembly comprising a hub adapted to be secured to a drive for controlling said assembly through an arc across said curved windshield surface between a first position at one side of said arc and a second position at the other side of said arc, and an elongate, resiliently flexible arm secured at one end to said hub for pivoting relative to said hub about an axis transverse to the longitudinal length of said arm, said arm having an effective length L and a wiper blade on the other or free end thereof, said free end of said arm deflecting through a predetermined distance D in axial direction relative to said hub as said wiper blade follows and curved outer surface of said windshield as said assembly is oscillated through said arc between its first and second positions, said arm being an integral, one-piece member of a relatively stiff, homogeneous, spring-like material having a constant taper in widthwise along its length with its narrowest width at its free end, the thickness of said arm decreasing from its said one end to its free end, said arm having an initial unflexed, curved position with the radius of curvature of the arm ranging between about one half and one and a half times the effective length L of said arm and a flexed position in which said free end of the arm exerts a desired resilient force on the wiper blade carried thereby for operatively holding the wiper blade against the curved outer surface of the windshield as the arm is operated, said arm having a substantially uniform stress level along a substantial portion of its effective length L when said arm is in its flexed position.

4,318,202

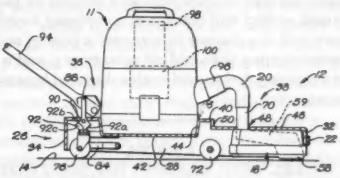
CONVERSION DEVICE FOR CANNISTER VACUUM CLEANERS

Donald M. Holman, 7302 Larsen, Shawnee, Kans. 66203

Filed Oct. 16, 1980, Ser. No. 197,580

Int. Cl.³ A47L 9/00

U.S. Cl. 15—328 **7 Claims**



1. A conversion device for a cannister vacuum cleaner, said cleaner including means defining an inlet opening, and means for creating negative pressure conditions at said inlet opening, comprising:

a mobile base having structure thereon for releasably supporting said cannister vacuum cleaner thereon;

a powered cleaning device including

shiftable means for contacting a floor surface, and for loosening dirt or the like thereon;

motive means operatively connected to said shiftable means for operating the latter;

structure defining a passageway for vacuum removal of said dirt or the like from said floor surface;

means for mounting said cleaning device on said base in a position for cleaning of said floor surface; and

conduit means for releasably and operatively connecting said passageway-defining structure and said inlet opening, when a cannister vacuum cleaner is supported on said base.

4,318,203

SINGLE-HANDED OPERATION TYPE SCAVENGING BLOWER

Masatoshi Satoh, Tokyo, and Yoetsu Yokocho, Tachikawa, both of Japan, assignors to Kioritz Corporation, Japan

Filed Jul. 18, 1980, Ser. No. 170,315

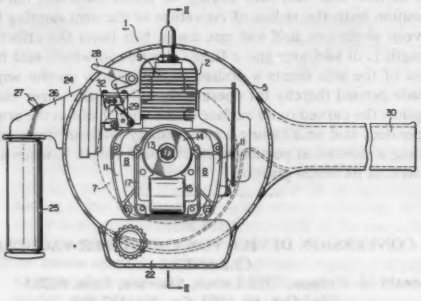
Claims priority, application Japan, Aug. 10, 1979, 54-109578[U]

Int. Cl.³ A47L 5/14

U.S. Cl. 15—344 **2 Claims**

1. A single-handed operation type scavenging blower comprising:

a fan in a fan chamber;
an air-cooled, two-cycle engine for driving said fan;
a handle gripped by one hand; and
an air discharging port; wherein the improvement resides in the arrangement whereby said engine is arranged in side-by-side relation to said fan chamber and formed in a unitary structure, and said handle and said air discharging port project outwardly from the outer periphery of the fan



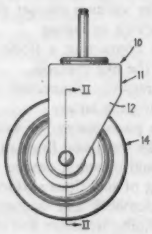
chamber; said scavenging blower further comprising an inner wall of said fan chamber and a crankcase of said engine secured to each other as a unit, an air passageway formed around said crankcase, an opening formed in said inner wall in a manner to surround a boss of said fan and communicating with said air passageway, and a fuel tank for supplying fuel to said engine disposed beneath said air passageway.

4,318,204

DISK WHEEL WITH BEARING HOUSING INJECTION MOLDED THEREIN

John W. Black, Hickory Corners, Mich., assignor to Pemco-Kalamazoo, Inc., Kalamazoo, Mich.

Filed May 2, 1980, Ser. No. 146,544
Int. Cl.³ B60B *33/00*
U.S. Cl. 16—46 **12 Claims**



1. A wheel construction, comprising:

wheel means having an axially extending hole therethrough and recess means adjacent the perimeter of the axial ends of said hole;

elastically deformable, moldable, synthetic resin liner means lining the internal surface of said hole and including means integral therewith received in said recess means for effecting a mechanical locking connection of said liner means and to prevent an axial movement thereof relative to said wheel means, said liner means including axially spaced bearing race receiving means at opposite axial ends of said hole;

a pair of outer bearing race means located at said opposite axial ends of said hole and received in said bearing race receiving means;

a cylindrical axle having shoulder means at opposite axial ends thereof, said axle being disposed coaxially within and spaced from said liner means; and

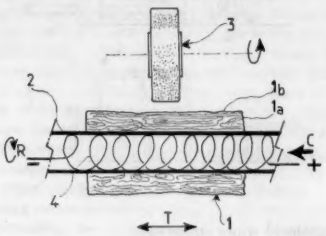
a pair of inner bearing race means on said axle and radially aligned with said outer bearing race means and anti-friction means positioned between respective pairs of said inner and outer bearing race means.

4,318,205

PROCESS FOR PEELING OFF INNER PROTECTIVE TISSUE OF ANIMAL OESOPHAGUS

Claude Tournier, Laloubiere, Lioujas, 12000 Rodez, France

Filed Feb. 27, 1980, Ser. No. 125,271
Claims priority, application France, Mar. 28, 1979, 79 08279
Int. Cl.³ A22C *17/00*
U.S. Cl. 17—45 **4 Claims**



1. A process for peeling off the protective tissue of the inner coats of hollowed musculomembranous organs of animals, such as the oesophagus, consisting successively in:

turning inside out the said oesophagus to expose the inner protective tissue,

making uniform the tubular form of the oesophagus,

solidifying the oesophagus by means of a freezing operation, and then abrading the oesophagus by means of a rotative abrasive tool in order to wear down the thickness of the outer layer constituting the said protective tissue.

4,318,206

COILER ARRANGEMENT

Johann W. Ferri, Greifensee; Hermann Gasser, Zurich, and Paulo Di Benedetto, Uster, all of Switzerland, assignors to Luwa AG, Zürich, Switzerland

Filed Mar. 13, 1980, Ser. No. 130,058
Claims priority, application Switzerland, Oct. 1, 1979, 8834/79
Int. Cl.³ B65H *54/80*
U.S. Cl. 19—159 R **9 Claims**

1. A coiler arrangement for band-like textile materials, such as sliver moving in a predetermined direction of travel, comprising:

means defining a compartment having a sliver outlet side;

means defining a negative pressure source with which there is operatively connected said compartment;

a pair of pressure rolls located at the region of said sliver outlet side of said compartment and through which passes the infed sliver and delimiting and closing-off the compartment in the direction of travel of the sliver;

tubular infeed connection means for the infeed of the sliver to the pair of pressure rolls;

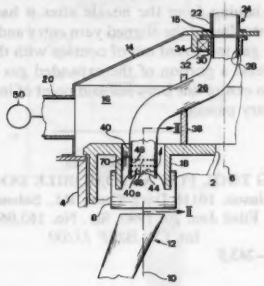
said tubular infeed connection means extending within the compartment and terminating at a mouthpiece surrounded by the compartment;

said pair of rolls defining therebetween a roll nip;

said mouthpiece having sliver outlet opening means directed towards the roll nip of the pair of pressure rolls;

said mouthpiece being provided at its circumference with air exit openings which flow communicate with the compartment;

said mouthpiece possessing guide surface means for the sliver; and



said guide surface means serving to support the fibers of the sliver and counteracting sliver expanding forces exerted by the air escaping through the mouthpiece air exit openings.

4,318,207

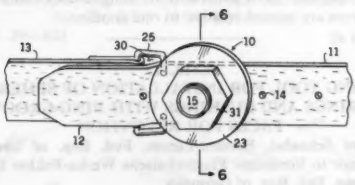
BELT FASTENER

Ronald Stroud, 2332 Addie Ave., St. Louis, Mo. 63114

Filed Mar. 29, 1979, Ser. No. 24,885

Int. Cl.³ A44B *11/25*

U.S. Cl. 24—163 K **4 Claims**



1. A belt fastener for a belt having a pierced end and a looped end, the fastener comprising:

(a) a threaded post,

(b) means for attaching said post to the pierced end of the belt,

(c) a plate member having an opening for receiving said post,

(d) means for attaching the plate member to the looped end of the belt,

(e) a threaded fastener threadedly engageable with said post for retaining the plate member on said post, and

(f) the post attachment means including a flatheaded fastener having a threaded portion extending through the pierced end of the belt and the post threadably receiving the threaded portion to clamp said post to the pierced end of the belt.

4,318,208

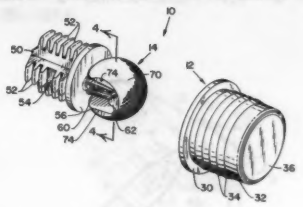
FASTENING SYSTEM

Jesus Borja, Glenview; John A. Bakker, Bartlett, both of Ill., and Edward C. French, Fullerton, Calif., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 5, 1979, Ser. No. 79,754

Int. Cl.³ F16B *13/00*

U.S. Cl. 24—305 **8 Claims**



1. A plastic two piece fastener for maintaining two workpieces in movable juxtaposed relationship wherein each of the workpieces has a bore which may be proximate to yet misaligned with a similar bore in the other workpiece, said fastener system including a female socket adapted to be accepted in the bore in one workpiece and a double ended self-mounting male stud having a first portion adapted to be accepted in the aligned bore of the other workpiece and a second portion projecting outwardly therefrom adapted to be complementarily accepted within said female socket, said female socket having external means impinging on the wall of said bore to retain said female socket within said bore, means projecting radially inwardly of said socket to engage said second portion, said first portion of said male stud including a substantially rigid axially extending first element having laterally projecting resilient means adapted to permit ready introduction into a bore and positive retention against inadvertent withdrawal, a laterally extending flange means between said first and second portions serving generally as a head member to limit the depth of introduction of said first portion into a bore, said second portion including a coaxial means extending in the opposite direction from said first portion, said coaxial means being deflectable substantially as in precession at its end opposite said flange means and said coaxial means further having means including a curvilinear exterior surface extending outwardly from the end of said coaxial means substantially in all directions and further having at least two laterally reversley directed curvilinear means extending toward said flange means, said deflectable coaxial means of said second portion including a tapered stem generally decreasing in thickness due to a general reduction in cross sectional area as it extends away from the flange means toward said deflectable head, said curvilinear means forming a deflectable head acceptable in complementary relation within said female socket, whereby said deflectable head and said tapered stem are laterally movable as in precession and adapted to accommodate centerline tolerance variations between said two workpieces.

4,318,209

APPARATUS FOR THE WET TREATMENT OF TUBULAR KNITTED TEXTILE MATERIAL

Manfred Schulerer, Michelstadt, Fed. Rep. of Germany, assignor to Bruckner Apparatebau GmbH, Erbach, Fed. Rep. of Germany

Filed Apr. 16, 1980, Ser. No. 141,137

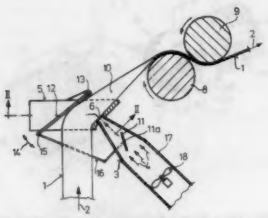
Claims priority, application Fed. Rep. of Germany, May 9, 1979, 2918695

Int. Cl.³ D06C *3/00*

U.S. Cl. 26—74 **8 Claims**

1. Apparatus for controlling accurately the degree of inflation of wet traveling tubular knitted textile material, in order to prevent excessive distention of the tubular knitted material and

to maintain an intermediate degree of inflation, comprising means for transporting the tubular knitted material substantially vertically upwardly, at least one nozzle arranged to direct a stream of air against one side of the upwardly traveling tubular knitted material and thus to inflate the tubular material, a device for measuring the width of the inflated tubular material adjacent to the nozzle, said device comprising a relatively light feeler element which is generally inclined to the horizontal and rests against the upwardly traveling tubular knitted



material on the side opposite to the side against which the nozzle is directed, a throttle valve which varies the flow of said stream of air and which is operated by said feeler element, said feeler element operating to prevent excessive distention of the tubular knitted material by closing said valve, and thus operating to maintain an intermediate degree of inflation, and a roller arranged to bend the tubular knitted material substantially horizontally at the top of its upward travel and thus to support the weight of the upwardly traveling tubular material and to prevent passage of the air inflating the tubular material.

4,318,210

APPARATUS FOR HEATING AND DRAWING OF SYNTHETIC FILAMENTS

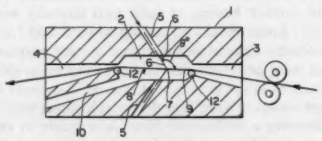
Peter W. Foster; Thomas Berry, both of Tiverton, England, and Karel Murenbeeld, Geneva, Switzerland, assignors to John Heathcoat & Company Limited, England

Division of Ser. No. 872,076, Jan. 25, 1978, Pat. No. 4,217,323. This application Nov. 28, 1979, Ser. No. 97,952

Claims priority, application United Kingdom, Jan. 27, 1977, 3299/77

Int. Cl.³ D02J *1/22*

U.S. Cl. 28—246 **8 Claims**



1. Apparatus for providing a continuously moving synthetic yarn containing a section of maximum temperature, of substantially constant length and of fixed position in space comprising a body member formed with an internal chamber and aligned yarn passages at opposite ends of the chamber extending between the exterior of the body member and the chamber for entry and exit of yarn respectively, yarn feed means arranged to move yarn through the chamber from the yarn entry passage to the yarn exit passage and at least one fluid ejecting nozzle debouching into the chamber, the cross sectional area of the nozzle being smaller than the cross sectional area of the chamber by an amount sufficient to provide that gas ejected from the nozzle can cross the chamber without touching the adjacent side walls of the chamber and being contoured such that gas issuing from the nozzle maintains a rod-like shape when crossing the chamber, the nozzle being orientated in a direction such that its line of discharge intersects the common centre line of the aligned yarn entry and exit passages at a point of intersection and at an angle such that the portion of the line of discharge of the nozzle between the nozzle and said point of intersection makes an obtuse angle with the portion of said common centre line which lies between said point of intersection and the yarn passage arranged for entry of yarn to the chamber, the chamber being formed with an expansion space opposite the nozzle, said expansion space being formed to receive gas issuing from the nozzle after it has crossed said common centre line of the aligned yarn entry and exit passages, to cause the gas to expand out of contact with the yarn and to redirect at least a portion of the expanded gas back towards said common centre line between said point of intersection and said yarn entry passage.

4,318,211

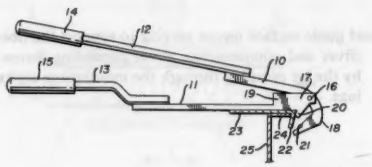
CRIMPING TOOL FOR AUTOMOBILE DOOR PANELS

James Hoskinson, 10118 Duck Creek Rd., Salem, Ohio 44460

Filed Jun. 26, 1980, Ser. No. 163,068

Int. Cl.³ B23P *11/00*

U.S. Cl. 29—243.5 **4 Claims**



1. A tool for crimping the flanged edge of a replacement door panel on a flanged door frame of an automobile comprising a pair of levers, a first one of which has a straight end, a holding jaw on said straight end, means on said holding jaw for engaging said flanged edge of said replacement door panel, the other of said pair of levers having a curved end of semi-U shape forming a crimping jaw, pivot means engaging said holding jaw adjacent its outermost end relative to said lever and engaging said curved end of said other lever substantially midway of said curved end so that the crimping jaw formed by said curved end is movable on an arc toward and away from said holding jaw in overlapping relation to said flanged edge of said replacement door panel and the flanged door frame when said levers are moved relative to one another.

4,318,212

STAKING TOOL FOR INSTALLATION OF SPHERICAL BEARINGS AND BUSHINGS WITH RING-GROOVED FACES FOR RETENTION

Siegfried Schnabel, Bremen-Lesum, Fed. Rep. of Germany, assignor to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Fed. Rep. of Germany

Filed Nov. 23, 1979, Ser. No. 97,153

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1978, 2851308

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—252 **9 Claims**

1. A portable equipment and tool for staking spherical bearings or bushings into bores of parts such as fittings in aircraft, comprising:

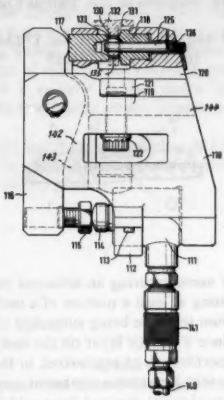
a housing as a supporting device;

a two-arm lever pivoted on said housing, there being a short arm and a long arm;

a hydraulic drive on the housing, having a piston rod operatively connected to the long arm of the lever; and

a tool attachment of U-shaped configuration, releasably secured to the housing and having two arms respectively slidingly supporting a staking head element and a staking foot element for engagement with opposite axial ends of

the bearings and bushings, one of the elements being in operative connection with the short arm of the lever so



that the staking head and staking foot elements are moved towards each other upon operation of the drive to obtain staking.

4,318,213

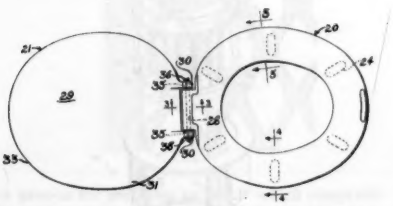
METHOD OF MAKING RESILIENT SEATS AND COVER LIDS THEREFOR FOR WATER CLOSETS

George W. Blount, Hamilton, Ohio, assignor to New Century Products, Inc., Middletown, Ohio

Division of Ser. No. 288,730, Sep. 13, 1972, Pat. No. 3,988,789. This application Jun. 18, 1976, Ser. No. 697,465

Int. Cl.³ B23P *19/00*; B29C *5/00*

U.S. Cl. 29—434 **26 Claims**



1. A method of manufacturing resilient unitary integrally cushioned toilet seats, comprising the steps of in a first mold molding a stiff but resilient synthetic resin preformed stiffening portion, removing said preformed stiffening portion from the first mold, mounting said preformed stiffening portion in a second mold, charging said second mold with additional uncured synthetic resin mixture which is foamable, permitting said charge to cure to form a seat having a self-skinned internally foamed cushion unitarily extending from the sides and top of said preformed stiffening portion.

4,318,214

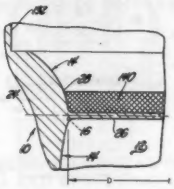
METHOD AND APPARATUS FOR MANUFACTURING AND FORMING ENGINE INDUCTION PASSAGE VENTURI

Robert W. Dodson, Royal Oak, Mich., assignor to Colt Industries Operating Corp, New York, N.Y.

Division of Ser. No. 923,214, Jul. 10, 1978, Pat. No. 4,230,645. This application Nov. 13, 1979, Ser. No. 93,047

Int. Cl.³ B22D *11/126*

U.S. Cl. 29—527.6 **6 Claims**



1. A method of manufacturing an induction passage structure, comprising the steps of forming a die mold assembly having mold cavity means formed therein defining the desired external and internal configuration of said induction passage structure with said internal configuration comprising venturi means, employing molten die casting metal to fill said cavity means, permitting said molten metal to solidify to thereby have said structure and venturi means formed as a casting in a manner whereby flashing of said metal occurs at the throat of said venturi means, removing said casting from said cavity means, cutting the flashing from the venturi means to thereby define the configuration and size of the throat of the venturi means, and coining that portion of the surface which defines the inlet side of the venturi means and which is upstream of the throat of the venturi means.

4,318,215

CONDUCTOR TERMINATING APPARATUS

Harley R. Holt, Forest Park, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 936,314, Aug. 23, 1978, abandoned, which is a division of Ser. No. 735,955, Oct. 27, 1976, abandoned. This application Mar. 27, 1980, Ser. No. 134,428

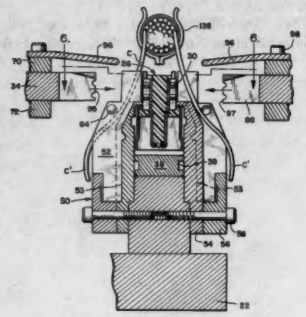
Int. Cl.³ H01R *43/04*

U.S. Cl. 29—566.3 **5 Claims**

1. In an apparatus for terminating a plurality of insulated conductors in the contacts of an electrical connector having means for mounting said connector in conductor receiving position, means for aligning said conductors adjacent said contacts, insertion means for engaging and pressing said conductors into said contacts and means for applying an operating force to said insertion means, the improvement comprising:

said conductor aligning means including a comb element having a plurality of comb teeth defining a series of closed conductor receiving slots, each said slot being defined by

a slot bottom, opposing faces of adjacent comb teeth, and protruding means, spaced from said slot bottom, for



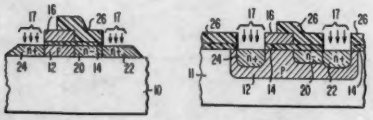
blocking exit from said slot to confine a conductor in said slot without directly applying a holding force thereto.

4,318,216

EXTENDED DRAIN SELF-ALIGNED SILICON GATE MOSFET

Sheng T. Hsu, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 959,848, Nov. 13, 1978, Pat. No. 4,232,327.
This application Jan. 30, 1980, Ser. No. 116,789
Int. Cl.³ H01L *21/26*
U.S. Cl. 29—571 **6 Claims**



1. A method of forming an extended drain field effect transistor comprising the steps of:

forming a layer of insulating material on a surface of a body of semiconductor material;

forming a polycrystalline silicon gate member over the layer of insulating material, the region of the body of semiconductor material underlying the gate member representing the channel region;

forming a drift region of a given conductivity type in a certain portion of the body, the drift region having a given concentration of conductivity modifiers therein opposite in type to that of the remainder of the body;

forming spaced source and drain regions of the given conductivity type in the remaining portions of the semiconductor material, the source and drain regions having a greater concentration of conductivity modifiers therein than the drift region; and

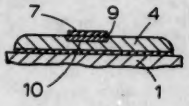
forming contact means in direct connection with the source, drain and gate member.

4,318,217

METHOD OF MANUFACTURING AN INFRA-RED DETECTOR DEVICE

Michael D. Jenner, and Maurice V. Blackman, both of Southampton, England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 15, 1980, Ser. No. 178,645
Int. Cl.³ H01L *31/18*
U.S. Cl. 29—572 **12 Claims**



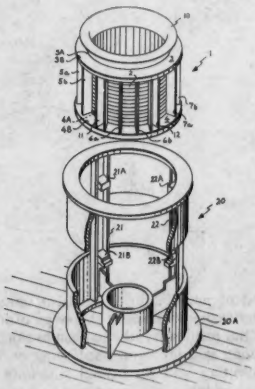
1. A method of manufacturing an infra-red radiation detector device comprising at least a portion of a surface of a body of mercury cadmium telluride being subjected to a conversion treatment to produce a surface layer on the body, after which a heating step is performed, characterized in that the surface layer produced by said conversion treatment comprises a sufficient quantity of an element derived from said body as to act subsequently as a source for re-introducing said element into said body, said element being a constituent of said body and being such that when present in an excess concentration in the material of said body it yields the characteristics of n-type material at the operating temperature of the detector device, and in that said surface layer is heated in said heating step to a temperature in excess of 100° C. to introduce a quantity of said element from the surface layer into an underlying region of the body so as to form a p-n junction in the body.

4,318,218

METHOD OF MAKING A DYNAMOELECTRIC MACHINE STATOR ASSEMBLY

Donald A. Nelson, Scotia, N.Y., assignor to General Electric Co., Schenectady, N.Y.

Division of Ser. No. 65,662, Aug. 10, 1979, Pat. No. 4,284,920.
This application Feb. 17, 1981, Ser. No. 235,072
Int. Cl.³ H02K *15/14*
U.S. Cl. 29—596 **2 Claims**



1. A method of making a dynamoelectric machine comprising the steps of:

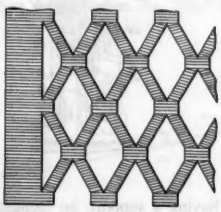
a. providing a packaged stator core assembly including a stack of laminations compressed between a pair of annular clamping flanges that are held in position by tension bars,
b. mounting a plurality of generally V-shaped torque ribs between the clamping flanges with a key portion at the apex of each torque rib held in locking engagement with a positioning means on the stack of laminations so that the shear center of each torque rib is approximately in alignment with a tangent to the stator laminations taken through the positioning means closest to said key portion, and
c. securing the stator against rotation in a housing by welding only the clamping flanges to support blocks fixed to the frame of the housing.

4,318,219
Patent Not Issued For This Number

4,318,220
PROCESS FOR RECOVERING HEAT RECOVERABLE SHEET MATERIAL

Stephen H. Diaz, Los Altos, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 31,468, Apr. 19, 1979, Pat. No. 4,223,209, which is a division of Ser. No. 775,882, Mar. 9, 1977, Pat. No. 4,177,446, which is a continuation-in-part of Ser. No. 638,440, Dec. 8, 1975, abandoned. This application Feb. 14, 1980, Ser. No. 121,522
Int. Cl.³ H05B *3/00*
U.S. Cl. 29—611 **4 Claims**

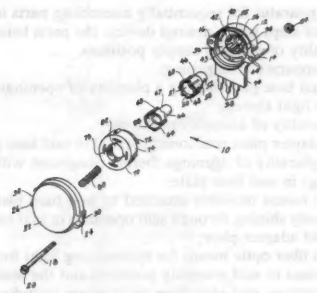


1. A process for preparing an article which comprises:
(1) connecting an external source of electric power to a pair of electrodes of an article which comprises a heat-recoverable sheet material and adjacent and secured to one face of the sheet material a heating element which comprises:
(A) A laminar member composed of a material which comprises an organic polymer and electrically conductive particles dispersed in the polymer in amount sufficient to render the member electrically conductive; and
(B) a pair of laminar flexible electrodes which (i) are connected to opposite faces of said laminar member; (ii) are in a plane substantially parallel with said laminar member; and (iii) are connected to said external source of power to cause current to pass through said laminar member;
said laminar member and laminar electrodes having a plurality of apertures through the thickness thereof, the aperturs being of elongated closed cross-section and overlapping one another to permit at least one of the dimensions of the heating element in the plane thereof to be changed by a change in the shape of the apertures;
(2) passing current through said heating element until said sheet has been heated to a temperature at which it becomes responsive; thereby causing a change in the dimensions of said heating element and said sheet material at said temperature.

4,318,221
PROCESS FOR PRODUCING AN ON-OFF PUSH SWITCH AND RESULTING ARTICLE

John D. Van Benthuysen, and Carlton M. Osburn, both of Elkhart, Ind., assignors to CTS Corporation, Elkhart, Ind.

Division of Ser. No. 119,643, Feb. 8, 1980, Pat. No. 4,293,751. This application May 7, 1981, Ser. No. 261,588
Int. Cl.³ H01H *11/00*
U.S. Cl. 29—622 **3 Claims**



1. A process for producing a control switch, comprising the steps of forming a contactor plate from sheet metal stock, insert molding a switch housing about said plate, trimming the housing-and-contactor plate sub-assembly from said sheet metal stock, mounting a first switch operating member within said housing and having a plurality of crowned gear teeth around the periphery of said first member, mating a second switch operating member having crowned gear teeth in confronting relation with the crowned teeth of said first member to effect rotary biasing movement therebetween, coupling for angular displacement with the second switch operating member a drive arm member having resilient contactor paddles, mounting a resilient spring member to resist longitudinal displacement of said first and second switch members, and capturing the combination of said members within an enclosed housing chamber such that the contactor paddles biasly engage the contactor plate whereby periodically effecting displacement of said first and second switch operating members in a switch operating direction against the resistance of the resilient spring member effects sequentially a joint longitudinal displacement of said first and second switch operating members and a coincident angular displacement of said second operating member, and releasing the switch effects a switch-restoring angular movement of said second operating member and a simultaneous joint longitudinal displacement of said first and second switch operating members.

4,318,222
APPARATUS FOR SEQUENTIALLY ASSEMBLING COMPONENTS

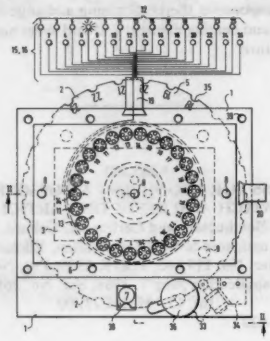
Hans-Jürgen Fröhlich, Almstrasse 16, D - 7601 Durbach, Baden, Fed. Rep. of Germany

Filed Jan. 4, 1979, Ser. No. 877

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1978, 2801093; Dec. 4, 1978, 2852417

Int. Cl.³ H05K *13/04*

U.S. Cl. 29—721 **14 Claims**



1. Apparatus for sequentially assembling parts in a specified order of steps into a desired device, the parts being located in a plurality of material supply positions,

the apparatus comprising:

a fixed base plate having a plurality of openings transparent to light therein;

a plurality of assembly positions;

an adapter plate positioned parallel to said base plate having a plurality of openings therein congruent with said openings in said base plate;

light means movably attached to said base plate for selectively shining through said openings in said base plate and said adapter plate;

glass fiber optic means for transmitting light from said light means to said assembly positions and the material supply positions, said glass fiber optic means including a plurality of fittings secured in said openings in said base plate and said adapter plate and glass fiber optic conduit means extending between selected fittings and said assembly positions and the material supply positions; and

means for sequentially moving said light means from opening to opening;

whereby the specified order of steps of assembly at said assembly positions and appropriate material supply positions to each step are successively indicated by said light means being sequentially moved past said openings shining light therethrough and further through the thereby selected portions of said glass fiber optic means to said assembly positions and the material supply positions.

4,318,223
SHAVING APPARATUS

Wijtse Bergsma, and Pieter Riemersma, both of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

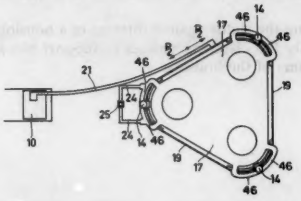
Filed Sep. 29, 1980, Ser. No. 192,115

Claims priority, application Netherlands, Oct. 30, 1979, 7907946

Int. Cl.³ B26B *19/14*

U.S. Cl. 30—43.6 **5 Claims**

1. A shaving apparatus comprising a housing, a shaving head associated with said housing and provided with at least one shaving unit having a stationary cutting member and a cooperating cutting member drivable by means of a motor and a coupling spindle, an element for retaining the cutting members of each shaving unit in the shaving head, an axially adjustable pin positioned in the housing at a location near the rim of the stationary cutting member of each shaving unit, one end of the adjustable pin engaging said rim, a resilient element engaging the rim of and supporting said stationary cutting member at another location near said rim, said stationary cutting member being pivotable about said adjustable pin against the action of



said resilient element, a flexible endless band having an inclined contact face associated with each shaving unit, the other end of each adjustable pin engaging the corresponding inclined contact face of said flexible endless band, an actuating knob on the housing wall, and an actuating arm connecting the flexible endless band to the actuating knob, whereby, upon actuation of said actuating knob, the flexible endless band is movable in a direction substantially transverse of the axial direction of each adjustable pin.

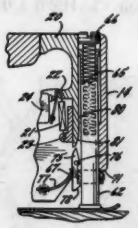
4,318,224
CUTTING TOOL WITH ADJUSTABLE DEPTH CONTROL FOOT

Sidney A. Getts, 1923 N. Church St., Rockford, Ill. 61103

Continuation-in-part of Ser. No. 49,427, Jun. 18, 1979, Pat. No. 4,255,858. This application Feb. 12, 1981, Ser. No. 233,620

Int. Cl.³ B27B *19/02*

U.S. Cl. 30—377 **8 Claims**

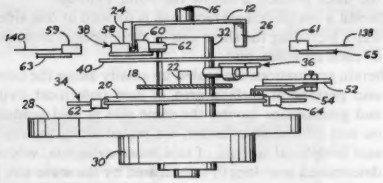


1. A tool having a support, an elongated cutting device, means on said support and connected to said cutting device for driving the latter, a foot located adjacent said cutting device for controlling the depth of penetration of the cutting device into a workpiece, means mounting said support on said foot to move toward and away from the foot, resiliently yieldable means urging said support away from said foot, adjustable means for stopping said support in different selected positions when said support is moved toward said foot, and a latch acting between said support and said foot and movable to a latched position holding said support in a selected position and preventing said support from moving away from said foot under the urging of said resiliently yieldable means, said latch being selectively movable to an unlatched position permitting said support to move away from said foot.

4,318,225
ANGLE MEASURING APPARATUS

Frederic W. Jenkinson, Salem, Oreg., assignor to McHenry Systems, Inc., Donald, Oreg.

Filed Dec. 4, 1979, Ser. No. 100,032
Int. Cl.[3] G01B 7/30
U.S. Cl. 33—1 PT 10 Claims

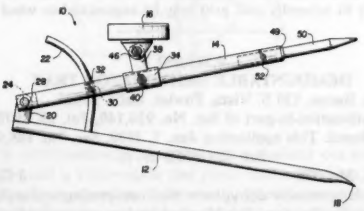


1. An apparatus for measuring angles comprising,
(a) a disc having a circular track of marks on one surface, such tracks being concentric with said disc,
(b) a means for rotating said disc about its axis,
(c) a mark sensor located adjacent said disc for sensing said marks, said sensor generating a mark signal for each mark passing thereby,
(d) angle-to-signal conversion means including a pair of angle-input means located adjacent said disc, one of said angle-input means being fixed relative to the rotary disc and the other of said angle-input means being mounted for rotation coaxial with but independently of said rotary disc for establishing with said fixed angle-input means an angle to be measured, said conversion means further including reference means mounted for rotation with said disc and arranged for interaction with said pair of angle-input means so that a reference signal is generated each time said reference means passes each angle-input means of the pair, and
(e) control circuitry operatively interconnected with said conversion means and said mark sensor, said circuitry being operable to count mark signals occurring between selected reference signals.

4,318,226
SCRIBING COMPASS FOR MARKING LOGS FOR NOTCHING AND FITTING

Harold J. Engelhart, 56 Beech Ct., Babbitt, Minn. 55706

Filed Nov. 24, 1980, Ser. No. 209,474
Int. Cl.[3] B43L 13/02
U.S. Cl. 33—41 E 1 Claim

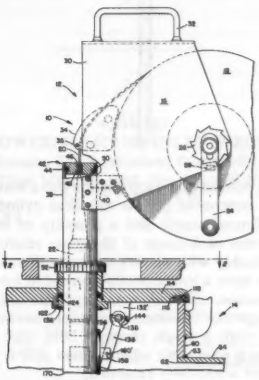


1. In combination, a scribing compass comprising a single pair of rigid pivoted arms adapted to engage the surface of a pair of vertically spaced logs for longitudinally marking the upper surface contour of the lower log on the lower surface of the upper log; one of said arms terminating in an outwardly curved point and its inner end having an upwardly apertured pivot section fixed thereto; an arcuate guide rod having the aperture as its center fixed to said arm; the other of said arms being slotted and apertured at its inner end and being pivoted to said pivot section; said other arm being apertured to receive said arcuate guide rod and including means for locking said arms by said rod in any adjusted position; a sleeve including a vertically extended pivot section and side slot mounted on said other arm and being rotatably adjustable thereabout; said sleeve being secured in adjusted position by a thumb screw mounted in said arm and bearing against the sides of said slot; a double level pivoted axially of said arm on said sleeve pivot section and having means for securing it in adjusted position; said level having bubbles arranged axially and transversely thereof; and marking means adjustably mounted in the outer end of the other of said arms in vertical alignment with said curved point.

4,318,227
DEVICE FOR DETERMINING PHYSICAL QUALITIES OF PRESSURIZED CONTAINER CONTENTS

William H. Gravert, Port Washington, N.Y., assignor to Marine Moisture Control Company, Inc., Inwood, Long Island, N.Y.

Continuation-in-part of Ser. No. 29,134, Apr. 11, 1979, Pat. No. 4,226,023. This application Jun. 4, 1980, Ser. No. 156,367
The portion of the term of this patent subsequent to Oct. 7, 1997, has been disclaimed.
Int. Cl.[3] G01F 23/04
U.S. Cl. 33—126.5 2 Claims



1. Apparatus for gauging liquids in pressurized tanks through a service hatch comprising in combination a portable handl-held measuring device and a valve housing assembly secured to the tank outlet port at each station to be gauged, said hand-held measuring device comprising:
a reel housing having a hand hold thereon;
a fluid responsive device;
a tape reel mechanism including a tape assembly having one end coupled with the fluid response device and the other end coupled with said tape reel mechanism;
a second elongate hollow housing carried by the reel housing; said second housing being adapted to receive a portion of the tape assembly and the fluid responsive device;
means at the upper end of the second housing providing a gas seal for the tape assembly;
a stuffing nut engaging the external surface of the second housing;
a service opening into the tank to be gauged having a hatch ring secured thereabout;
a hatch hinged to the hatch ring;
means for latching the hatch to the hatch ring;
an externally threaded neck carried by the hatch sized to be engaged by the stuffing nut carried by the second housing;
a valve seat is formed at the inner surface of the hatch about the threaded neck;

a valve cap is pivotally mounted to the under surface of the hatch for movement from seating engagement with the valve seat to a position to permit entry of a portion of the second housing into the valve housing; and

a spring urging the valve cap into sealing engagement with the valve seat.

4,318,228

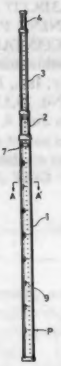
LEVELING POLE

Shinhichi Kimura, 2-11, Kita, 4-chome, Imazu, Tsurumi-ku, Osaka, Japan

Continuation of Ser. No. 916,854, Jun. 19, 1978, abandoned. This application May 31, 1979, Ser. No. 44,091

Int. Cl.³ G01B *3/08*

U.S. Cl. 33—161 **1 Claim**



1. A leveling pole having a top portion and a bottom portion, comprising an outermost hollow elliptical cylinder made of fiberglass reinforced plastic and a plurality of inner hollow elliptical cylinders each made of fiberglass reinforced plastic and inserted slidably with respect to each other, wherein said inner cylinders have a lower portion provided internally with an engaging means, said outermost cylinder and said inner cylinders, except the innermost cylinder, having an upper portion bored with a single through hole with which said engaging means is engagable whereby said pole is radially and axially regulated when fully extended;

wherein said through hole is bored in the upper portion of each of said outermost cylinder and said inner cylinders, except the inner most cylinder;

wherein said engaging means comprises for each inner cylinder a spring mount rigidly fixed to the lower portion of each inner cylinder, a coil spring having one end thereof rigidly fixed to said spring mount and extending across the longitudinal axis of said leveling pole, a single locking button means movable in a substantially straight line direction transverse to said longitudinal axis of said leveling pole and associated with each said through hole and having an upper thick portion and a lower thin portion to form a slow slope in vertical section and a curved cross section to conform with the circumferential shape of each outer cylinder, and the thick portion being disposed toward the top of said leveling pole, and having an uppermost angular edge and being connected to the other end of said coil spring, and normally held against said coil spring internally of said inner cylinder, whereby first frictional engagement of said locking button means with said through hole and away from the cylinder surface having graduations thereon is automatically effected by the transverse plunging action of said uppermost angular edge into said hole by resilient action of said coil spring when said cylinder is extended, and whereby second locking engagement of said locking button means with said through hole is automatically effected under the guidance of said uppermost angular edge by further resilient action of said coil spring when said cylinders are extend through their full length,

whereby said button means extends through said through hole of the outer cylinder; and whereby retracting of the cylinder is effected by manual pushing of the button means against the resilient force of said coil spring until the thick portion is below the outer cylinder;

wherein a peripheral surface area is formed at one side centrally including the short axis of the elliptical cross section of each cylinder, and

wherein graduations are scaled up axially along the center of said peripheral surface area of said outermost cylinder, and graduations having the same size as said graduations on said outermost cylinder, are scaled along the center of said peripheral surface of said inner cylinders, whereby a determined total length is indicated by the same size graduations when the inner cylinders are fully extended.

4,318,229

FLUIDIZING GRID

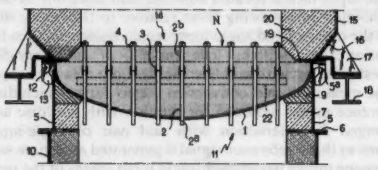
Georges Meunier, Boulogne, France, assignor to Tunzini Nessi Entreprises D'Equipements, Argenteuil, France

Filed Jul. 16, 1980, Ser. No. 169,266

Claims priority, application France, Jul. 16, 1979, 79 18352

Int. Cl.³ F26B *17/10*

U.S. Cl. 34—57 B **7 Claims**



1. A fluidizing grid for use in a fluidizing chamber in order to fluidize solid particles at high temperatures, said grid comprising a support in the form of a metal tank having an inner upwardly facing concave bottom surface including curved sloping sides, a plurality of vertically extending metal fluidizing tubes traversing said bottom surface and extending upwardly therefrom so that their upper ends lie in a common horizontal plane and so that the height of the tubes above the bottom surface is sufficient to allow a layer of particles to rest on the bottom surface to form a thermal screen, an injection port on an upper section of each tube with the curved sloping sides extending upwardly to a level below the level of the injection ports, and a metal ferrule welded to an upper outside portion of the curved sloping sides and into which said sides partially fit whereby said grid may be connected to wind box.

4,318,230

DEMOUNTABLE DEHYDRATOR TRAY

Leon C. Bacon, 120 S. Vista, Fowler, Calif. 93625

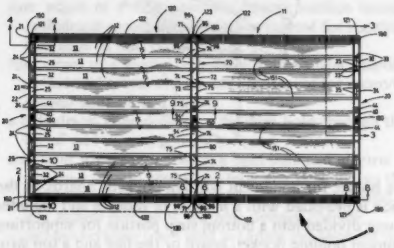
Continuation-in-part of Ser. No. 924,140, Jul. 13, 1978, abandoned. This application Jan. 7, 1980, Ser. No. 109,966

Int. Cl.³ F26B *25/18*

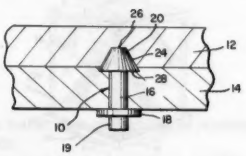
U.S. Cl. 34—238 **3 Claims**

1. A demountable dehydrator tray comprising a plurality of substantially flat, semi-flexible slats having corresponding side edges and opposite ends; a pair of side members; a pair of cross members each composed of a pair of substantially identical components with each component having a predetermined interior side and an opposite exterior side, the interior side mounting a plurality of interior projections extending therefrom in spaced relation and arranged so that in an assembled tray the interior sides of the components of each cross member are disposed in juxtaposition and the corresponding interior projections of the components extend therebetween to form a

plurality of slat receiving openings facing laterally of the cross member in a common direction and obstructed in a common opposite direction, the exterior side of each component having exterior projections and receptacles dimensioned for individual slidable receipt of the exterior projections of one component in the receptacles of another component and said exterior projections and said receptacles arranged on each component in a substantially identical asymmetric pattern permitting the exterior projections of one component of one assembled tray to be received in the receptacles of a component of another assembled tray placed in register therewith irrespective otherwise of the orientation of said trays; and means for releasably interconnecting the pair of cross members and pair of side members to form a substantially rectangular frame with the side members disposed in spaced, substantially parallel relation to each other with corresponding opposite end portions thereof interconnected by said cross members substantially right-angularly related to the side members and with said plurality of slats individually captured in and extending between corresponding slat receiving openings to form said assembled tray.

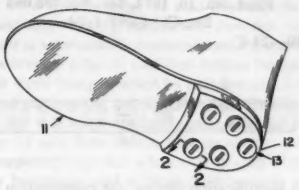


4,318,231
ICE STUD FOR SHOES
Conrad Simoneau, 760 Farm Rd., Marlboro, Mass. 01752
Filed Feb. 15, 1980, Ser. No. 121,903
Int. Cl.³ A43C *15/00*
U.S. Cl. 36—67 R **1 Claim**



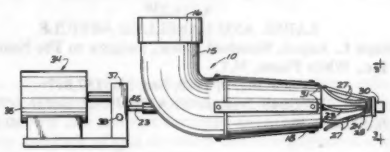
1. In combination, a shoe having a resilient out-sole and mid-sole and a removeable one piece stud embedded in said soles in which a portion of the stud projects beyond the outer surface of the sole, said stud comprising: a shank portion having a fusto-conical head at one end thereof, a tubular spike at its other end and an integral annular flange spaced upwardly a short distance from the tip end of the spike, said stud being embedded in the soles of the shoe with the fusto-conical head disposed in the mid-sole with its base resting on the inner surface of the out-sole and the shank in the out-sole with the annular flange bearing on the out-sole outer surface so that the spike projects beyond the outer surface of the out-sole and further insertion of the stud into the shoe is prevented.

4,318,232
HEEL STRUCTURE FOR SHOES
Yook J. Ching, 1136 Grant Ave., San Francisco, Calif. 94133
Filed Mar. 3, 1980, Ser. No. 126,540
Int. Cl.³ A43B *13/22, 23/28;* **A43C** *15/00*
U.S. Cl. 36—73 **2 Claims**



1. An improved heel structure for a shoe comprising at least one insert with a shank adapted to fit into a heel depression and to replaceably extend therefrom, each of said depressions having a central protuberance in the bottom thereof and each of said inserts having a central longitudinal apperture in the inner end of the shank thereof for tightly fitting on a protuberance in a heel depression to removably lock an insert in a heel depression.

4,318,233
POWERED LIQUID INLET SCREEN
Bernard F. Romain, 504 S. Meadow, Grangeville, Id. 83530
Filed May 16, 1980, Ser. No. 150,442
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—57 **5 Claims**

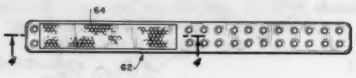


1. A liquid inlet for the open end of a small, portable dredge having a hand-operated flexible suction hose, comprising:
- a hollow tubular elbow having a rear discharge end adapted to be mounted to the open suction hose end, and an angularly displaced forward intake end having a forwardly facing opening centered about an axis;
- a straight elongated shaft having a front end and a rear end;
- bearing means located within the hollow tubular elbow mounting the elongated shaft between its respective ends for free coaxial rotation about said axis with the front shaft end located forward of the elbow intake end and with the rear shaft end projecting through the elbow at a point between the tube ends;
- drive means operably connected to said shaft for rotating the shaft about said axis; and
- a plurality of identical spiral-shaped spring metal fingers diverging rearwardly from a common connection at the shaft front end rearward to free ends positioned axially adjacent to and radially overlapping the forward intake end of the elbow;
- said spiral shaped fingers being equally spaced about the axis and defining a cone centered on the axis extending from a location at the shaft front end rearward to a base adjacent to the forward intake end of the elbow.

4,318,234
IDENTIFICATION DEVICE WITH VERSATILE IMPRINTING MEANS

Stanley E. Charles, La Canada; Donald A. Long, Burbank; Peter G. Katsenis, Tujunga, and Walter W. Mosher, Jr., Granada Hills, all of Calif., assignors to Precision Dynamics Corporation, Burbank, Calif.

Filed Jan. 10, 1977, Ser. No. 758,063
Int. Cl.[3] G09F *3/14*
U.S. Cl. 40—21 C 4 Claims

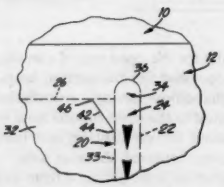


1. In an identification device, the combination of: an elongate, flexible band having first and second end portions adapted to be juxtapositioned to encircle an object, said first end portion having an exterior surface which is receptive to adsorption, absorption and retention of marking indicia, and means associated with said flexible band for securing said first and second end portions into encircling captive relationship of an object to be identified, said first end portion having a pair of spaced apertures, said second end portion having at least a pair of rows of spaced apertures and wherein said means comprises at least a first locking fastener having a female portion and a male portion interconnected therebetween and being adapted to be received within at least one aperture of said first end portion and one aligned aperture of said second end portion in locking relationship with said flexible band.

4,318,235
LABEL AND LABELLED ARTICLE

Joseph L. Augeri, Stamford, Conn., assignor to The Nestle Co., Inc., White Plains, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,847
Int. Cl.[3] G04F *3/00, 3/02;* A61F *13/02;* B65D *3/26*
U.S. Cl. 40—306 10 Claims

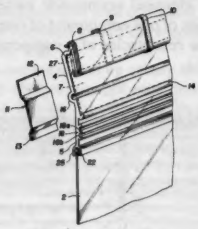


1. An article comprising:
(a) a body;
(b) a sheet like label secured to said body and closely overlying a surface thereof, said label having a pattern of plural tear lines which define a panel and an elongated strip, said panel and said strip being integral parts of the label, a first edge of said panel being contiguous with a first long side of said strip, said tear lines extending around the periphery of said panel and along the long sides of said strip, one of said tear lines defining the boundary between said panel and said strip, the remainder of said label completely surrounding said panel and said strip; and
(c) means for providing digital access to a first end portion of said strip for initiating separation of such end portion from the remainder of said label.

4,318,236
HOLDER HAVING MOVEABLE INDEXES

Luciano Giulini, Via Cenisio, 10/A, Milan, Italy

Filed May 11, 1979, Ser. No. 38,266
Claims priority, application Italy, May 19, 1978, 23600 A/78
Int. Cl.[3] B42F *21/00*
U.S. Cl. 40—360 7 Claims

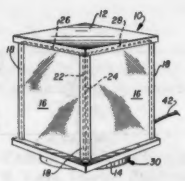


1. In a holder for document holding pockets, boards or the like which is provided with a number of indexes and includes a panel unit divided into a bottom strip portion for supporting the document holding pocket, board or the like and a top strip portion, slightly inclined with respect to the bottom strip portion, the top strip portion being provided with a first elongated guide, a number of markers which are slidable within the first elongated guide, a second elongated guide underlying and parallel to the first elongated guide and a slidable cursor in the second elongated guide, an improvement comprising an internal groove extending within said second elongated guide along its length; and a plate having an extension which is complemental to and fits within said internal groove to allow said plate to be fixed along said internal groove, said plate having a surface facing outward from said second elongated guide on which it is possible to write, and said slidable cursor and said plate being removably positioned in said second elongated guide whereby one can replace the other.

4,318,237
LIGHT DISPLAY UNIT

David W. Hicks, P.O. Box 5922, Arlington, Tex. 76011, assignor to David Hicks, Rockport, Tex.

Filed Oct. 14, 1980, Ser. No. 196,854
Int. Cl.[3] G09F *13/00*
U.S. Cl. 40—502 1 Claim



1. Device for the display of graphic art, which comprises:
an enclosure structure having the shape of a polyhedron;
a light source within the enclosure;
at least one plane face of translucent material having dimensions equal to at least one side of the enclosure on the enclosure so that light from the light source may pass through the plane face of translucent material;
a stationary base having top and bottom sides;
a rotatable means for supporting said enclosure on said stationary base;
at least one translucent piece of graphic art;
a plane face of transparent material having dimensions equal to said plane face of translucent material;
four posts having first and second ends severally extending

along the lines defined by the intersection of sides of the polyhedral enclosure;

a groove cut longitudinal of each of such posts as defined at least one side of said polyhedral enclosure so that any pair of such grooves are depthwise coplanar with and receive each to itself an edge of said plane face of translucent material, said plane face of transparent material, and said translucent piece of graphic art and so that said graphic art is held between said plane face of translucent material and said plane face of transparent material with the said plane face of transparent material situated on the outer most side with respect to the interior of said enclosure;

four edges of a first generally square surface having one cylindrical recess at each corner thereof for receiving the first ends of said posts;

four edges of a second generally square surface having one cylindrical recess at each corner thereof for receiving the second ends of said posts;

a cylindrical edge defining a circular hold through the center of said second generally square surface;

said light source comprising a light bulb and electric socket attached to said stationary base and oriented so that the light bulb may extend upward through said second generally square surface at the hole defined therein;

a circular rotating track held in sliding engagement with the top of said stationary base;

a raised ring on said circular rotating track for engaging said second generally square surface abaxial of the hole defined in said second generally square surface; and

bearing means for reducing friction between the circular rotating track and the top of said stationary base.

4,318,238

REVERSIBLE, PORTABLE DIRECTION SIGN

Anthony J. Macarle, Jr., 4008 N. 59th Ave., Phoenix, Ariz. 85063

Filed Feb. 11, 1980, Ser. No. 120,254
Int. Cl.³ G09F *15/00, 7/00*
U.S. Cl. 40—607 **7 Claims**

1. A portable traffic sign comprising in combination:

a base member;

an upright member attached rigidly to said base member;

a first indicia bearing panel rotatably attached to said upright member;

means for pivotally attaching said first indicia bearing panel to said upright member; and

a second indicia bearing panel attached in fixed relationship to said upright;

spacer means for supporting a portion of said second indicia bearing panel a predetermined distance from said upright,

said first indicia bearing panel being located so that a first portion of said second indicia bearing panel covers part of said first indicia bearing panel,

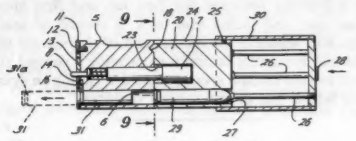
said second indicia bearing panel having a first word disposed on the front surface thereof, said first indicia bearing panel having a second word and a third word disposed on a front surface thereof, said second and third words being inverted with respect to each other, said first indicia bearing panel including an arrow imprinted thereon, said arrow being disposed between said second and third words, said arrow being substantially parallel to said second and third words, said second word being covered by said first portion of said second indicia bearing panel when said third word is substantially horizontal and is located adjacent to a bottom edge of said first indicia bearing panel, said arrow being completely exposed when said third word is substantially horizontal and is locatad adjacent to a bottom edge of said first indicia bearing panel, said third word being covered by said first portion of said second indicia bearing panel when said second word is substantially horizontal and is located adjacent to a bottom edge of said first indicia bearing panel, said arrow being completely exposed when said second word is substantially horizontal and is located adjacent to a bottom edge of said first indicia bearing panel, wherein said second word and said first word together convey a message to direct traffic to the right of said portable traffic sign and said third word and said first word together convey a message to direct traffic to the left of said portable traffic sign.

4,318,239

FRONT LOADER FOR REVOLVERS

Jonathan W. Phillips, Jr., 210 E. 4th St., Houston, Tex. 77007; Ted E. Bailey, Jr., 4023 Tartan La., Houston, Tex. 77025, and C. L. Bailey, Jr., Rte. 3, Box 327 A, Houston, Tex. 77045

Filed Apr. 7, 1980, Ser. No. 137,649
Int. Cl.³ F42B *39/04*
U.S. Cl. 42—89 **5 Claims**



1. In a reloader, a revolver frame having a revolving cylinder having cartridge chambers therein and the cylinder having a back plate on one end and cartridge engaging latch means extending into each of said chambers and in engagement with cartridges loaded therein, a yoke pivotally mounted on said frame and having a lateral extension thereon extending axially through said cylinder and having means for releasably locking said cylinder in place on said frame, a reloading cylinder having reload cartridge chambers therein and being movable against the front end of said revolver cylinder, with the chambers of said cylinders in alignment and means on said reloading cylinder for moving cartridges out of the chambers thereof into the chambers of said revolver cylinder, overcoming the retaining means therein and removing the cartridge casings in said revolver cylinder and latching said reload cartridges in place in said revolver cylinder.

4,318,240

CONVERTIBLE DECOYS ASSEMBLED FROM AND COLLAPSIBLE TO FLAT SHEETS

Gene G. Hillesland, 703 SW. King Ave., Wadena, Minn. 56482

Filed May 16, 1980, Ser. No. 150,425
Int. Cl.³ A01M *31/06*
U.S. Cl. 43—3 **7 Claims**

1. A water fowl decoy for dispersing a plurality thereof in an area to simulate a feeding and resting ground for such fowl and having an assembly and disassembly capability between a flat planar state for storing and transportation and a three-dimensional operative configuration, said decoy comprising a blank of flexible sheet material printed on at least one surface thereof

to simulate the markings of a waterfowl and cut in substantially bilateral symmetry with respect to a longitudinal center line extending from a relatively narrow tail at one end of the blank, through an intermediate relatively wide body portion and terminating at the opposite end in a neck which bifurcates as a pair of head segments extending laterally from said center line, said body portion having a pair of laterally extending shoulders adjacent said neck, and two pairs of integrally formed releasable interengaging means, one pair extending from said shoulders and the other pair extending from said bifurcated head segments enabling said blank, when flexed along said center

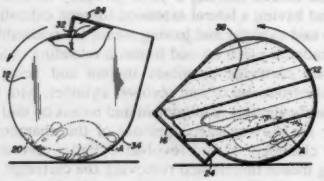
line as an axis and said printed surface exposed, to be retained in said three-dimensional configuration, said pair of releasable interengaging means extending from said shoulders comprising a pair of tabs, a first of said tabs being attached adjacent the lateral end of a first of said shoulders and extending medially to provide a first slit between the first tab and first shoulder having an open end facing said neck, a second of said tabs being attached adjacent the medial end of the second of said shoulders and extending laterally to provide a second slit between said second tab and second shoulder having an open end facing the lateral end of said second shoulder.

4,318,241

ANIMAL EXTERMINATION TRAP

Arthur L. Fassauer, 420 Foster La., Canyon, Tex. 79015

Filed Aug. 28, 1979, Ser. No. 70,647
Int. Cl.[3] A01M *23/02*
U.S. Cl. 43—58 **6 Claims**



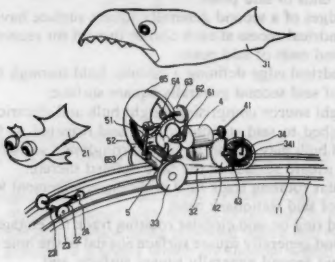
1. An animal trap comprising:
an enclosure dimensioned to accommodate the body of an animal;
structure defining an opening in said enclosure to enable the animal to enter said enclosure;
quantities of first and second compositions being maintained separately from one another within said enclosure;
said first composition reacting with said second composition when mixed therewith to form a foam material having a volume greater than the combined volumes of said quantities of said first and second compositions which hardens after a predetermined time interval; and
means responsive to the entering of an animal within said enclosure for causing mixing of said first and second compositions within said enclosure to fill the space between said enclosure and the animal with foam which hardens to prevent escape of the animal and results in the death of the animal through asphyxiation.

4,318,242

RAIL TRACK CHASING TOYS

Lin Pin-Houng, 1105 Room, 185 Sung-Kang Rd., Taipei, Taiwan

Filed Jul. 3, 1980, Ser. No. 165,678
Int. Cl.[3] A63H *17/00, 11/10, 29/16, 11/00*
U.S. Cl. 46—44 **6 Claims**



1. A set of rail track chasing toys comprising a relatively large toy (hereinafter referred to as predator) having a mouth movable between an open and a closed position and being normally open, a relatively small, light toy (hereinafter referred to as prey), an endless rail track on which the predator and prey are placed with the predator disposed behind the prey, means on said predator and prey to enable them to run along said track, means on said predator operable to drive same along said track, said predator being provided with means to produce an airflow having a thrust directed at said prey and sufficient to propel said prey along said track whereby said predator can chase said prey along said track, means on said predator for interrupting said airflow periodically for a definite interval so that the prey may slow down and allow said predator to approach said prey so that the latter enters the open mouth of the predator, and means for moving the predator's mouth to the closed position after said prey enters therein and to the open position after said interval, said airflow resuming after said interval and being operable to push the prey out of the predator's mouth, whereby the predator can continue to chase said prey.

4,318,243

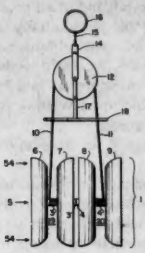
PRECESSION-RESISTANT YO-YO DEVICE

Patrick MacCarthy, Golden, Colo., assignor to Ramon E. Bisque and Franklin J. Stermole, both of Golden, Colo.

Filed Aug. 15, 1980, Ser. No. 178,628
Int. Cl.[3] A63H *27/12*
U.S. Cl. 46—61 **22 Claims**

1. A toy capable of combined rotational, translational and orbital motion, comprising:
a first and second axle positioned on a common axis and connected to each other such that each axle is capable of independent rotation;
a first and second disc, each connected at its center point to the first axle;
a third and fourth disc, each connected at its centerpoint to the second axle; and

a single string connected at a first end to said first axle between said first and second discs and connected at a second end to said second axle between said third and fourth discs.

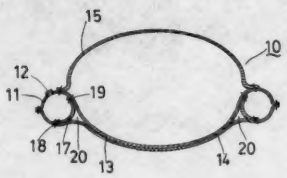


4,318,244

INFLATABLE THROWING TOY

Sidney H. Magid, 4th Fl., No. 10, Alley 5, Lane 12, Sec. 4, Jen Ai Rd., and Wang C. Chung, 3, 11th Fl., No. 311, Sec. 4, Chung-Hsiao East Rd., both of Taipei, Taiwan

Filed Jun. 3, 1980, Ser. No. 156,112
Int. Cl.³ A63H *27/00*
U.S. Cl. 46—74 D **3 Claims**



1. An inflatable toy made of air impervious sheet material comprising an inflatable outer ring having an inflating valve located thereon, said outer ring having a top wall side and a bottom wall side interconnected by a cylindrical gusset section; a first disc section which is an extension of the wall of the bottom side of said outer ring; a second disc section opposite to said first disc section which is an extension of the wall of the top side of said outer ring; and a third disc section extending from the top side of said outer ring and having an inflating valve thereon; said first and secod disc sections maintained in close proximity with each other separated only by the thickness of said gusset section; whereby, when the toy is inflated, said first disc section will form an inward curve at the inner side of the bottom of said outer ring.

4,318,245

VOCALIZING APPARATUS

Roger H. Stowell; Michael O. Hirtle, both of East Aurora, N.Y.; Russell W. Brown, Nepean, and Arthur D. Moore, Stittsville, both of Canada, assignors to The Quaker Oats Company, Chicago, Ill.

Filed Jan. 22, 1980, Ser. No. 114,219
Int. Cl.³ A63H *3/28*
U.S. Cl. 46—232 **25 Claims**

1. Vocalizing apparatus comprising means for synthesizing a plurality of different sounds, means for controlling and operating said synthesizing means to produce a sequence of said sounds in a predetermined pattern, position responsive means for activating said controlling means, and means controlled by said controlling and operating means for operating said synthesizing means to produce the same sound in different locations in said pattern at different durations.

7. A speaking doll having a vocabulary of a plurality of sounds comprising means for synthesizing and voicing said sounds, means for operating said synthesizing means to produce a pattern of said sounds, means for controlling said operating means to activate said operating means depending upon the state of motion of said doll, said operating means comprising digital controller means for storing information representing said sounds, and means for generating control signals corresponding to said information in predetermined sequences to cause said pattern of sounds to be synthesized by said synthesizing means, said controlling means comprising means for providing signals indicating movement of said doll, said digital controller means further comprising means responsive to said

indicating signals for operating said control signals generating means to produce said sounds in a first pattern when said doll is moved and in a second pattern when said doll is not in motion for at least a first predetermined period of time after having been moved.

11. The invention as defined in claim **7** wherein said indicating signal providing means comprises a motion responsive switch.

12. The invention as defined in claim **11** wherein said motion responsive switch comprises a housing defining a closed interior, at least two contact elements in said housing, and a contactor having a predetermined mass movable in the interior of said housing to make contact between said contact elements.

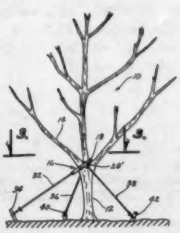
13. The invention as defined in claim **12** wherein said contactor is a ball of conductive material of a diameter smaller than said housing interior.

4,318,246

MEANS FOR SECURING A TREE TO GROUND STAKES

Evan D. Jungbluth, 3062 S. 42nd St., Omaha, Nebr. 68105, and Francesco Fuccio, 1613 N. 84th St., Omaha, Nebr. 68114

Filed Mar. 10, 1980, Ser. No. 128,448
Int. Cl.³ A01G *17/06*
U.S. Cl. 47—42 **2 Claims**



1. A means for securing a tree to ground stakes positioned around the tree, comprising,

an elongated flat flexible member having opposite ends,

said flexible member adapted to extend around the tree so that its opposite ends are positioned adjacent each other,

a first supporting wire means having one end secured to the adjacent opposite ends of said flexible member and its other end secured to one of the ground stakes,

at least two first and second connector members longitudinally slidably embracing said flexible member between the ends thereof,

a second supporting wire means secured at one end to said first connector member and its other end secured to one of the ground stakes,

and a third supporting wire means secured at one end to said second connector member and its other end secured to one of the ground stakes.

4,318,247

PLANT SUPPORTING

Charles W. Lewis, 2612 Georgia Ave., NW., Washington, D.C. 20001

Continuation-in-part of Ser. No. 9,184, Feb. 2, 1979, abandoned. This application Mar. 28, 1980, Ser. No. 135,116

Int. Cl.³ A01G *17/10*

U.S. Cl. 47—43 **6 Claims**

1. A plant supporting device consisting essentially of an integral structure consisting of circular cross-section rod of a homogeneous corrosion-resistant relatively rigid material, the integral structure including:

a pair of arms, and a junction between the arms, the arms and junction being disposed in a common plane;

a substantially linear ground-engaging support;

means for providing a transition between the substantially linear ground-engaging support and said junction so that said common plane containing said arms and junction make an acute angle of about 15° to 25° with said substantially linear support; and

said arms, junction, and transition means being Y-shaped.

4,318,248

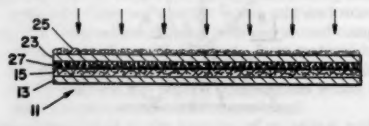
MAT FOR GROWING LAWNS AND OTHER VEGETATION

Lawrence C. Muldner, Saratoga, Calif., assignor to Fisons-Western Peat Moss, Ltd., Vancouver, Canada

Filed Dec. 12, 1980, Ser. No. 216,071

Int. Cl.³ A01C *1/04*

U.S. Cl. 47—56 **4 Claims**



1. An improved laminated mat for growing vegetation on soil, comprising,

a lower base sheet laminate of water pervious web material, said material being quickly biodegradable upon wetting;

a seed bed including a plurality of seeds, granules of dehydrated gel material, and dried peat particles, said granules being rehydratable substantially immediately upon wetting to form a heavy gelatinous substance which anchors said mat to the soil, wets said seeds and said peat particles, and maintains moisture in said bed, said peat particles being expandable upon wetting to surround and form a mulch for said seeds;

means for adhesively securing said seed bed to said base sheet; and

an upper veil laminate of fibrous, non-woven, porous web material and means for adhesively securing said veil to said seed bed, said veil comprising means for expanding with said peat particles to maintain the structural integrity of said mat after biodegradation of said base sheet, said veil being slowly biodegradable to deteriorate after germination and rooting of said seeds.

4,318,249

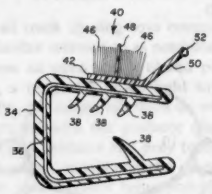
GRIPPABLE SLIDING SEAL STRIP

Philip R. Landreth, Wheaton, Ill., assignor to Schlegel Corporation, Rochester, N.Y.

Filed Feb. 27, 1980, Ser. No. 125,196

Int. Cl.³ E06B *7/22*

U.S. Cl. 49—490 **3 Claims**



1. A seal strip for sealing the space between a fixed frame and a sliding member comprising:

an elongated channel-shaped element adapted to be secured to the fixed frame;

a base strip;

a longitudinally extending row of pile having one surface thereof secured to one side of said base strip and the opposite free surface of said pile adapted to slidably engage the sliding member;

a flexible tubular member connecting the opposite side of said base strip to a portion of the outer surface of said channel-shaped element; and

a guard arm integral with and extending from said tubular member toward the sliding member for preventing foreign material from penetrating said pile.

4,318,250

WAFER GRINDER

Harold R. Klievoneit, Phoenix, and Arthur A. Smith, Tucson, both of Ariz., assignors to St. Florian Company, Ltd., Phoenix, Ariz.

Filed Mar. 31, 1980, Ser. No. 134,999

Int. Cl.³ B24B *7/04*

U.S. Cl. 51—134 **8 Claims**

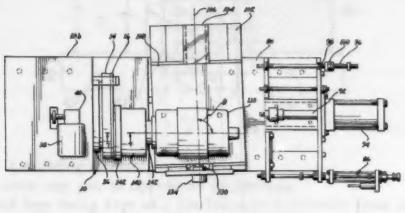
1. Apparatus for precisely regulating and controlling the depth to which work pieces are ground by a grinding wheel by relocating the grinding wheel in one direction which relocation results in only a fractual movement of the grinding wheel in another direction toward the work pieces, said apparatus comprising in combination:

(a) a rotatable support wheel for supporting the work pieces

in a plane perpendicular to the axis of rotation of said support wheel;

(b) a rotatable grinding wheel for grinding the work pieces, said grinding wheel having a working surface in a plane parallel to the work piece supporting plane of said support wheel and rotating about an axis parallel with the axis of said support wheel;

(c) means for repositioning said grinding wheel along a path fixed at an angle of other than 90° to the axis of rotation of



said grinding wheel to draw said grinding wheel across the face of said support wheel to grind the work pieces supported thereon and to simultaneously relocate said grinding wheel toward or away from the work pieces depending upon the direction of travel along the path traversed by said grinding wheel;

whereby, the extent of movement of said grinding wheel toward or away from the work pieces is a function of the tangent of the path angle to provide a multiplied control and regulation grinding depth capability resolution.

4,318,251

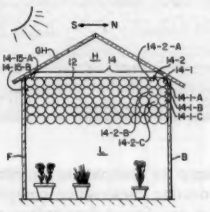
INFLATABLE AND AUTOMATICALLY DEPLOYABLE HEAT BLANKET

Marshall N. Winkler, 146 South St., Rockport, Mass. 01966

Filed Feb. 22, 1980, Ser. No. 123,911

Int. Cl.³ E04B *1/34*

U.S. Cl. 52—2 **4 Claims**



1. Repetitively deployable and retractable insulation for building enclosures with large glazing areas comprising,

means defining a parallel series of vertical stacks of elongatable tubes with the tubes of each stack being parallel to each other and horizontally elongated,

each of said tubes being inflatable and deflatable,

means for inflating and deflating said tubes,

whereby the stacks spread as the tubes therein are inflated so that the series covers a large area and the stacks contracts as the tubes thereof are deflated to retract into a smaller storage area, and

guide means extending substantially horizontally and non-parallel to the direction of horizontal elongation of the tubes and spanning the series of stacks and defining directions of expansion and retraction travel for the stacks as the tubes therein are inflated or deflated, respectively.

4,318,252

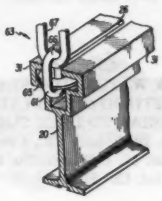
JOIST ASSEMBLY FOR STAGE EQUIPMENT SUPPORT SYSTEM

Richard W. Janson, Box 6909, Canton, Ohio 44706

Continuation-in-part of Ser. No. 71,586, Aug. 31, 1979, Pat. No. 4,285,095, which is a continuation-in-part of Ser. No. 855,256, Nov. 28, 1977, Pat. No. 4,155,306, which is a continuation of Ser. No. 734,106, Oct. 20, 1976, abandoned, which is a division of Ser. No. 617,508, Sep. 29, 1975, Pat. No. 4,014,071. This application Jan. 14, 1980, Ser. No. 111,602

Int. Cl.³ E04C *3/06*; E04B *5/55*

U.S. Cl. 52—39 **11 Claims**



1. A horizontal truss which comprises: a centrally vertically disposed portion including a plurality of diaphrams; an upper chord portion having two spaced-apart arms extending upwardly and outwardly from the upper aspect to said central portion and which define between them an upper groove, two spaced-apart vertically disposed plates respectively connected to said arms; a cross-member connecting said plates immediately under said groove and defining together with said plates a lower notch; a lower chord portion which is substantially identical in structure to said upper chord portion except that it is inverted whereby each said notch in each said chord portion faces the other and receives said plurality of diaphrams, fastening means received through said plates and said diaphrams rigidly connecting each of said diaphrams to said upper chord portion and to said lower chord portion; a supporting column having four legs defining a cruciform-configuration in cross-section for supporting the truss, one of said legs being received between and rigidly fastened to said vertically disposed plates of said upper chord and of said lower chord, the upper edge of one leg having said crossmember connecting said plates resting thereon, said upper edge of said one leg being connected to said plates by further of said fastening means received therethrough.

4,318,253

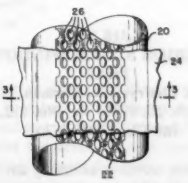
METHOD AND APPARATUS FOR PROTECTING PLASTIC COVERS FROM DETERIORATION

Janet Wedel, 2717 Wyman Dr., SE., Auburn, Wash. 98002

Filed Mar. 28, 1980, Ser. No. 135,163

Int. Cl.³ E04B *1/12*

U.S. Cl. 52—63 **6 Claims**



1. Apparatus for retarding deterioration of a flexible synthetic plastic cover, comprising:

at least one rigid synthetic plastic support member for said flexible synthetics plastic cover;

said flexible cover overlying a portion of the rigid synthetic plastic support member;

means for dissipating heat from between the flexible synthetic plastic cover and the rigid synthetic plastic support member to prevent accelerated deterioration of the flexible synthetic plastic cover when exposed to sunlight, including spacer means for insulating the cover from the support member; and including a meshed member adhesively bonded to the support member.

4,318,254

CONCRETE DECK WATER STOP SEAL, DECK FORM BOARD, AND METHOD OF APPLYING FINISHING MATERIAL TO DECK COPING

William J. Stegmeier, 1037 Shary Cir., Concord, Calif. 94520

Filed Mar. 17, 1980, Ser. No. 130,972

Int. Cl.³ E02D *27/00*

U.S. Cl. 52—169.7 **9 Claims**

1. A water stop seal structure for the joint between a deck and the upper end of a generally vertical wall of a swimming pool or the like wherein said deck defines a generally vertical coping surface overlying said wall, comprising: an elongated barrier component extendable along said joint to inhibit seepage of moisture therethrough; and a flange projecting outwardly from said barrier component beyond the structure thereof for the length of said seal structure and adjacent the upper edge thereof to present a finishing edge defining the lower edge of a finishing layer for said coping surface of said deck, said flange terminating in a free end outwardly of said barrier component providing a reference edge for use in applying a coating of a settable finishing material to said coping surface to form said layer.

4,318,255

MODULAR INTERIOR STORM WINDOW AND HEAT TRAP

Harry L. Long, 1211 Cherrystone, Norman, Okla. 73069

Filed Feb. 20, 1980, Ser. No. 122,884

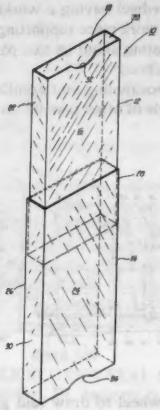
Int. Cl.³ E06B *3/26*

U.S. Cl. 52—202 **6 Claims**

1. A modular storm window assembly for insertion within the interior of a window frame and sill, comprising:

at least one male tubular module of uniform rectangular cross-section and transparency having first and second open ends;

at least one female tubular module of uniform rectangular cross-section and transparency having first and second open ends and being of a cross-sectional size to tightly receive said male tube within an open end; and



whereby the male and female tubular modules can be adjustably fitted for tight reception between the window sill and window frame.

4,318,256

ANCHOR CONSTRUCTION FOR PRESTRESSING MEMBERS

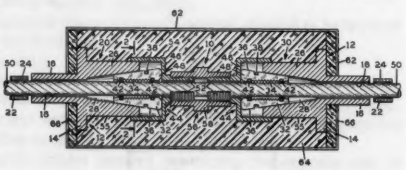
Cornelis Johannes F. Boonman, Burgemeester Merkusstraat 6, Delfgauw, Netherlands

Filed May 8, 1979, Ser. No. 37,304

Claims priority, application Netherlands, May 16, 1978, 7805229

Int. Cl.³ E04C *3/10*

U.S. Cl. 52—223 R **3 Claims**



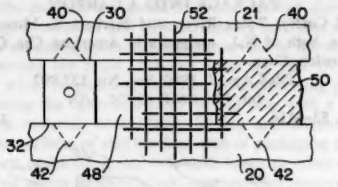
1. An anchor-clamp for clamping to a prestressing member in a prestressed concrete construction comprising: a pair of clamps arranged in an aligned face-to-face relationship, an opening extending through said aligned clamps for receipt of a prestressing member, each of said clamps including an activator portion, means for moving the activator portion of said clamps towards and away from each other, and gripping wedges in each of said clamps positioned to be activated by said activators to clamp a prestressing member positioned in said opening when said activator of said clamps are moved apart; each of said activator portions including a tubular member extending therefrom and toward the other of said tubular members, said means for moving the activator portions including a rotatable compression member engaged with both of said tubular members, and the engagement of said compression member with said tubular members being such that upon rotation of said compression member in one direction said activators move toward each other and upon rotation in the opposite direction said activators move away from each other to effect gripping of the prestressing member by the gripping wedges.

4,318,257

BUILDING ASSEMBLY WITH IMPROVED INSULATION CHARACTERISTICS

Robert L. Smith, 2026 Emery Wood Dr., Charlotte, N.C. 28210

Filed Mar. 10, 1980, Ser. No. 128,568
Int. Cl.³ E04B 1/10
U.S. Cl. 52—233 15 Claims



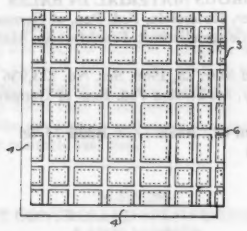
1. A building assembly comprising:
at least one pair of oppositely facing logs;
said logs being kept at a predetermined distance from one another by a pair of aligned spikes, said spikes being aligned with one another across the width of said logs, each spike including a pair of sharp tips on opposite ends;
said sharp tips being firmly received in said logs;
the predetermined distance between said logs forming an air space;
said air space receiving insulation having an R value greater than the R value of the logs whereby the overall R value of the building assembly is increased over that of a building of such logs only;
each spike including a hole there through, said holes receiving a rod mechanically connecting said aligned spikes together, said rod supporting at least one building material.

4,318,258

THERMAL INSULATION FOR BUILDINGS

Friedrich Heck, Heckenpfad 15, 6702 Bad Dürkheim, Fed. Rep. of Germany

Filed Mar. 14, 1979, Ser. No. 20,508
Int. Cl.³ E04F 13/04; E04C 2/20; E04B 1/80
U.S. Cl. 52—309.12 19 Claims



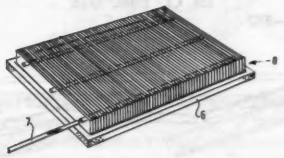
1. One of a plurality of foam-plastic thermal-insulating slabs having:
(a) a residual shrinkage capacity of from 1 to 4 millimeters per meter,
(b) a finite thickness and
(c) two major surfaces, one of which has rim portions and plural grooves of measurable and substantially uniform width and depth, the ratio of the slab thickness in millimeters to the product of the groove width in millimeters and the groove depth in millimeters being between 5:3 and 9:4, and being adapted for application to an outer wall of a building in juxtaposition to other similar slabs and for being secured to such similar slabs by a common unreinforced plaster coating covering their respective grooved surfaces and filling the grooves therein.

4,318,259

REINFORCED CERAMIC FIBER PANEL FOR OVEN WALLS

Gerardus M. C. Verheyden, Doesburg, Netherlands, assignor to Heattreatment Advising Company N.V., Curacao, Netherlands Antilles

Filed Apr. 4, 1980, Ser. No. 137,019
Claims priority, application Netherlands, Apr. 13, 1979, 7902962
Int. Cl.³ E04B 1/78
U.S. Cl. 52—404 13 Claims



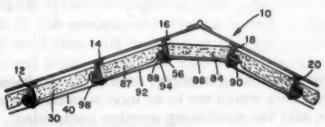
13. A heat insulating oven wall construction comprising, in combination:
a refractory base plate having a planar surface area and an assembly of refractory strips covering said surface, said assembly being adhesively bonded to said surface area and comprising a plurality of said refractory strips, each being made of highly refractory ceramic fiber material and having a plurality of holes therein, said strips being stacked to form said assembly and presenting exposed side edges defining a bonding surface conforming to and abutting said planar surface of the base plate with the holes of said strips being aligned to present channels therethrough; and
a highly refractory ceramic reinforcing tube arranged in each of said channels.

4,318,260

STRAP SYSTEM FOR SUPPORTING INSULATION IN BUILDINGS

Bart A. Siegel; Hal S. Hughes, Jr., and Winston M. Mullins, all of Knoxville, Tenn., assignors to Insulation Materials, Inc., Knoxville, Tenn.

Filed Feb. 15, 1979, Ser. No. 12,338
Int. Cl.³ E04B 2/00
U.S. Cl. 52—407 5 Claims



1. A system of strapping comprising in combination a plurality of first strap members connected in end-to-end relation, a second strap member connected to said first strap member at the site of joinder between adjacent ones of said first strap members employing a single fastening means, including means defining a slot adjacent one end of each of said members and through the thickness dimension thereof, said slot including a relatively open end portion and a connecting relatively narrow portion, said relatively narrow portion of said slot being closer to the respective adjacent end of its respective strap member than said relatively open end portion of said slot, and fastening

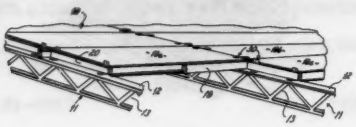
means including opposed head portions interconnected by shaft means, one of said head portions being of a size which is receivable through said relatively open end portion of said slot and said shaft means being of a size which is receivable in said relatively narrow portion of said slot when one head of said fastening means is on each of opposite sides of said strap member, whereby said second strap member is connected to said first strap members at the site of joinder between adjacent ones of said first strap members employing a single fastening means.

4,318,261

ROOF PANEL AND HOLD DOWN CLIP THEREFOR

Glenn W. Smith, Russells Point, Ohio, assignor to Larry Lieberman, Columbus, Ohio

Filed Dec. 26, 1979, Ser. No. 107,163
Int. Cl.³ E04C 5/16
U.S. Cl. 52—582 **18 Claims**



1. Mounting apparatus for mounting roof panels, having a core and upper and lower facing sheets on said core, to roof joists, said mounting apparatus comprising:

a beam for connecting the ends of one panel and an adjacent panel, an upper one of said sheets on each panel overlying a portion of said beam when it is disposed between two panels,

at least one slot in said beam disposed substantially perpendicularly to said sheets,

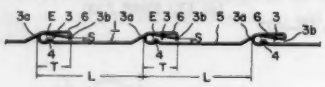
a clip means having a shank for extending through said slot, said clip means having a lower leg on said shank parallel to said sheets when in said slot for attachment to a roof joist, and at least one upper leg, on said shank, for folding over said one of said sheets.

4,318,262

BAR POSITIONING MEMBER AND ITS FORMING APPARATUS

Tsutomu Uehara, 1559-2 Oaza Asano, Kagawa-cho, Kagawa-gun, Kagawa-ken, 7611-11, Japan

Filed Oct. 25, 1978, Ser. No. 954,506
Int. Cl.³ E04C 5/18
U.S. Cl. 52—687 **6 Claims**



1. A bar-positioning member, such as for positioning metal reinforcing bars which are to be incorporated into a concrete structure, said bar-positioning member comprising:

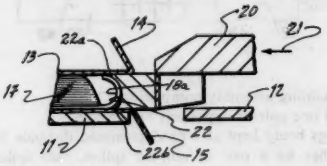
a long metal wire or rod having a least three bar-receiving indentations formed therein at longitudinally spaced intervals for receiving metal bars which are intersectingly disposed relative to said wire, each said indentation being of a substantially U-shaped configuration which defines an opening for permitting the metal bar to be seated within the indentation, the openings defined by all of said indentations opening outwardly in the same direction, which said direction extends substantially parallel with the longitudinal direction of said wire, each said indentation being formed by bending a portion of said wire into a U shape having a pair of legs which define the respective opening therebetween, one of the legs being sidewardly displaced relative to the longitudinally extending centerline of said wire and being formed by a folded part of said wire, the other leg being formed by a nonfolded part of said wire, said other leg being substantially longitudinally aligned with said wire.

4,318,263

APPARATUS FOR INSERTING A FILM-WRAPPED PACKAGE INTO A CARTON

Edward Curley, Toms River, and Herbert S. Muse, Morris Plains, both of N.J., assignors to American Can Company, Greenwich, Conn.

Filed Apr. 7, 1980, Ser. No. 137,897
Int. Cl.³ B65B 63/04, 5/04
U.S. Cl. 53—116 **10 Claims**



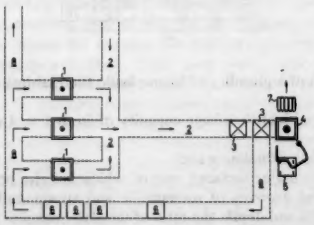
1. In an apparatus for inserting a generally rectangular package wrapped in flexible film and having a peripherally extending flange into a carton having an opening, including means for supporting said carton with said opening presented in a predetermined direction, means for supporting said package for insertion into said carton through said opening, and means for pushing said package into said carton while supported for said insertion, the improvement wherein said means for pushing comprises ram structure including an elongate, concavely curved surface coextensive with the flange extending along one side of said package and positioned with its longitudinal axis of curvature generally parallel to said flange on said one side, said ram structure being movable toward said package and operative to engage said concave surface with said flange to push said package into said carton and to curl said flange into said carton.

4,318,264

PROCESS AND APPARATUS FOR THE PACKAGING OF FIBROUS MATERIAL IN BALES

Siegfried Rewitzer, Ihrlerstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 25, 1980, Ser. No. 133,936
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1979, 2911958
Int. Cl.³ B65B 1/24; B30B 15/06
U.S. Cl. 53—436 **12 Claims**



1. In a process for the preparation of a bale of compressed fibrous material encased in a flexible packaging material by compressing said fibrous material in multiple stages and reinforcing said compressed bale of fibrous material with bands or

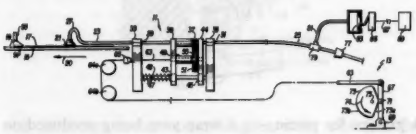
other suitable reinforcing means, the improvement which comprises partially compressing fibrous material in a plurality of first-stage presses by charging the fibrous material to a transportable press container said press container having a releasable bottom plate and partially compressing said charged fibrous material therein, controllably transporting said charged press container along a pre-selected path to align with a central press unit having a reciprocating ram, encasing the open end faces of the partially compressed fibrous material with blanks of packaging material and then advancing said ram to compress the encased fibrous material into a bale of fibrous material, removing the press container from the bale of fibrous material while maintaining said ram in compressing position and encasing the open side faces of said bale with a web of packaging material, controllably folding and fastening any projecting surfaces of said blank or web of packaging material to said bale, reinforcing said bale with bands or other suitable reinforcing means, retracting said ram and then removing bale from said central press unit and transporting the empty transportable press container back to one of said first-stage presses.

4,318,265

ENVELOPE FLAP OPENER

Winston A. Orsinger, Nazareth, and George Fallos, Easton, both of Pa., assignors to Bell & Howell Company, Chicago, Ill.

Filed Feb. 8, 1980, Ser. No. 119,917
Int. Cl.³ B31B *1/56*; B65B *43/39*
U.S. Cl. 53—492 **10 Claims**



9. A method for opening an envelope flap comprising:
transporting an envelope having a closed flap along a conveying means;
contacting said closed flap of said envelope with a suction member mounted on a rotatable hollow shaft by rotating said shaft until said suction member contacts said flap;
applying a vacuum to said suction member sufficient to cause the engagement of said flap and said suction member;
rotating said hollow shaft to partially open said flap;
advancing said suction member alongside said envelope so that the partially opened flap thereof passes beneath a fixed blade member until said fixed blade member moves said flap into a fully open position; and,
releasing the vacuum on said suction member as said blade member contacts said flap.

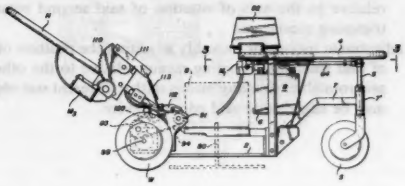
4,318,266

REMOTELY CONTROLLED SELF-PROPELLED POWER LAWN MOWER

Max Taube, 3322 Cat Cay Rd., Lantana, Fla. 33462

Filed Dec. 15, 1980, Ser. No. 216,687
Int. Cl.³ B62D *5/00*; A01D *75/28*
U.S. Cl. 56—10.2 **35 Claims**

1. A remotely controlled engine-operated power lawn mower having a rotary cutting blade, comprising
(a) a frame including a housing for said blade with actuating means therefor mounted at the top of said housing.
(b) a pair of traction wheels with common drive means therefor at one end of said frame, and a ground-engaging steering wheel in an adjustable vertical plane at the opposite end thereof,
(c) transmission means extending between said actuating means and said traction wheels comprising a horizontally disposed drive shaft, with means for adjusting the rotary speed and direction thereof,
(d) single clutch means between said drive shaft and traction wheels for selectively controlling the actuation of the latter,
(e) reversible electric motors with mechanical connections from each for adjusting, respectively, the vertical plane of said steering wheel, the speed and direction of said drive



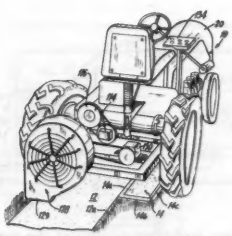
shaft, and the operative and inoperative positions of said clutch means, and
(f) electric circuit means mounted on said mower comprising a radio receiver, an energy source, servomotors, and relays adapted to be operated by radiant energy from a transmitter held by an operator at a remote point adapted to send signals of differentiating characteristics for selectively controlling said steering wheel, drive shaft and clutch means.

4,318,267

GRASS EDGING DEVICE

Robert W. Green, 2901 NW. 101 Ave., Miami, Fla. 33172

Filed Oct. 1, 1980, Ser. No. 192,686
Int. Cl.³ A01D *55/26*
U.S. Cl. 56—13.7 **15 Claims**



1. An edging device for trimming grass around the edges of objects set in the ground, the objects having at least first, second and third sides with said second side being transversely oriented to and between said first and third sides, said edging device comprising:
a vehicle;
a frame supported by said vehicle;
first rotatable trimming means carried by said frame for edging said first side of the object set in the ground, said first rotatable trimming means being rotatable about a substantially horizontal axis and adapted to follow the contour of said first edge of said object as said vehicle traverses past said object;
second rotatable trimming means carried by said frame for edging said second side of said object set in the ground, said second rotatable trimming means being rotatable about a substantially horizontal axis and adapted to follow the contour of said second edge of said object as said vehicle traverses past said object, the axis of rotation of said second rotatable trimming means being transversely

oriented relative to the axis of rotation of said first rotatable trimming means;

third rotatable trimming means carried by said frame for edging said third side of said object set in the ground, said third rotatable trimming means being rotatable about a substantially horizontal axis and adapted to follow the contour of said third edge of said object as said vehicle traverses past said object, the axis of rotation of said third rotatable trimming means being transversely oriented relative to the axis of rotation of said second rotatable trimming means; and

adjustment means for movably adjusting the position of one of said rotatable trimming means relative to the other of said rotatable trimming means so that different size objects may be edged with said edging device.

4,318,268

MULCHING LAWN MOWER

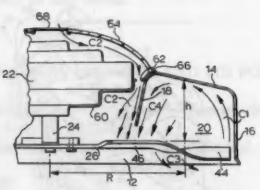
Edward Szymanis, Midhurst, Canada, assignor to Canadian General Electric Company Limited, Toronto, Canada

Continuation of Ser. No. 40,696, May 21, 1979, abandoned. This application Jun. 10, 1980, Ser. No. 158,158

Claims priority, application Canada, Aug. 31, 1978, 310440

Int. Cl.³ A01D *55/18*

U.S. Cl. 56—255 **18 Claims**



1. A chuteless mulching mower of the rotary scythe type having a cutting chamber including a top wall, a pair of concentric spaced apart skirt walls dependent therefrom, said top wall sloping upwardly from the outer of said skirt walls to the inner of said skirt walls, said top wall and said skirt walls together forming a toroidal chamber portion of said cutting chamber, a motor mounted on said cutting chamber in an area thereof generally bounded by said inner skirt wall, a vertical drive shaft from said motor projecting into said cutting chamber, a cutting blade having two radial portions and being secured to said drive shaft to rotate therewith, each radial portion having a tip portion adjacent said outer skirt wall adapted to scythe grass and provide an upward current of air within said toroidal chamber, an intermediate portion extending on each radial side of said inner skirt wall, said intermediate portion being adapted to comminute grass cuttings, said inner skirt wall being downwardly inwardly sloping so as to redirect said upward current of air in said toroidal chamber and grass cuttings entrained therein substantially across the radial path of said intermediate blade portion whereby said grass cuttings are substantially prevented from escaping from the toroidal chamber portion towards the center of the cutting chamber.

4,318,269

PROCESS AND APPARATUS FOR PIECING-UP A WRAP YARN

Gerhard Egbers; Peter Artzt, both of Reutlingen; Karl Brosch, Ebersbach-Weiler, and Hans Rottmayr, Reutlingen, all of Fed. Rep. of Germany, assignors to Schubert and Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Jul. 25, 1980, Ser. No. 172,298

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1979, 2930798

Int. Cl.³ B65H *81/08*; D02G *3/36*; D01H *15/00*

U.S. Cl. 57—18 **9 Claims**

1. A process for piecing-up a wrap yarn being produced on an apparatus including, a rotating hollow spindle through which a spinning fiber bundle is being delivered from a pair of delivery rolls, a binding thread running from a binding thread bobbin, and a yarn bobbin receiving said wrap yarn from said hollow spindle, said process comprising:

stopping the rotation of said hollow spindle, said binding thread bobbin and said yarn bobbin responsive to a break in said wrap yarn;

introducing a piecing thread through said hollow spindle and slidingly clamping said piecing thread above said pair of delivery rolls;

introducing said piecing thread into the nip of said pair of delivery rolls uniting said piecing thread with said spinning fiber bundle,

restarting the rotation of said hollow spindle and said binding thread bobbin and drawing said pieced thread out of said hollow spindle overcoming clamping of said piecing thread.

4,318,270

ADDITIVES FOR SUPPRESSING THE RADAR ATTENUATION OF ROCKET PROPELLANT EXHAUST PLUMES

Charles A. Orlick, LaVale; Edward H. deButts; John C. Allabashi, both of Cumberland, and Stanley E. Sweeney, LaVale, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 11, 1968, Ser. No. 721,141

Int. Cl.³ C06D *5/00*

U.S. Cl. 60—219 **3 Claims**

2. A method of reducing radar attenuation caused by the formation of free electrons in an exhaust plume of a combusting high impulse rocket propellant, comprising:

adding to a high impulse propellant, selected from the group consisting of composite propellants and composite-modified double-base propellants, which produces free elec-

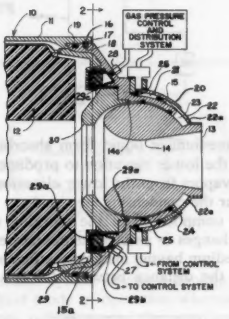
trons in the exhaust plume, a minor portion of a microwave attenuation reducing additive, said additive consisting of at least one compound containing an active element selected from the group consisting of those elements of Groups IB, IIIA, IVA, VB, VIB, VIIB and VIII of the Periodic Table; and wherein said microwave attenuation reducing additive is contacted with said combustion chamber simultaneously with combustion.

4,318,271

IGNITER AND GAS GENERATOR FOR ROCKET MOTOR

Harry W. Doukakis, Wilmington, and Robert E. Black, Jr., Newark, both of Del., assignors to Thiokol Corporation, Newtown, Pa.

Filed Jan. 14, 1980, Ser. No. 112,032
Int. Cl.[3] F02K *1/52*
U.S. Cl. 60—232 11 Claims



1. A rocket motor comprising an outer casing defining a combustion chamber, propulsion gas producing means in said chamber, thrust producing means including a vectorable nozzle attached to said casing and communicating with said chamber; and,

means for vectoring said nozzle including a combustible gas generant located in said motor between said nozzle and said propulsion gas producing means, combustion of said gas generant providing gaseous operating fluid for effecting vectoring of said nozzle and steering of said rocket motor.

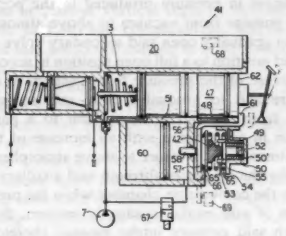
4,318,272

BRAKE FORCE AMPLIFIER

Heinz Leiber, Leimen, and Robert Mergenthaler, Heidelberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 902,601, May 2, 1978, abandoned. This application Jul. 25, 1980, Ser. No. 172,345
Claims priority, application Fed. Rep. of Germany, May 26, 1977, 2723734
Int. Cl.[3] B60T *13/20*
U.S. Cl. 60—553 8 Claims

1. A brake force amplifier for the brake system of a motor vehicle including a brake amplifier activatable by a brake pedal, said brake system comprising a pressure source, a cylinder connected to said pressure source, an augmenter piston in said cylinder, a fluid chamber in said augmenter piston, a pressure chamber formed in said cylinder between said pressure source and said augmenter piston, a control valve in said augmenter disposed between said pressure chamber of said cylinder and said fluid chamber in said augmenter piston, said control valve monitors both a pressure line connection from said pressure source to said cylinder that contains said augmenter piston, and a connection from said cylinder to a discharge line; a travel-limiting spring assembly, said travel-limiting spring assembly arranged in a spaced relation relative to said brake amplifier and said control valve and connected to said fluid chamber in said augmenter, through a hydraulic circuit, said travel-limiting spring assembly including spring means, the tension of which can be transferred to the brake pedal by means of said hydraulic circuit and a travel-limiting spring fluid cylinder communicating with said hydraulic circuit, a piston in said fluid cylinder related to said spring means and assembled in said fluid cylinder between said spring means and said fluid chamber, and a disengagement device operatively positioned relative to said piston in said fluid cylinder for disengaging said piston on the side opposite from said fluid chamber.

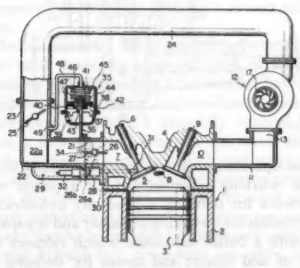


4,318,273

INTERNAL COMBUSTION ENGINE EQUIPPED WITH A TURBOCHARGER

Hidetaka Nohira; Kunimasa Yoshimura, both of Mishima, and Mitsuyuki Ugajin, Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 11, 1979, Ser. No. 74,527
Claims priority, application Japan, Jul. 2, 1979, 54-82568
Int. Cl.[3] F02B *37/00*
U.S. Cl. 60—611 18 Claims



1. An internal combustion engine having a combustion chamber and an intake valve, said engine comprising:

a primary intake passage communicating the combustion chamber with the atmosphere;

an exhaust passage communicating the combustion chamber with the atmosphere;

a turbocharger comprising a compressor arranged in said intake passage, and a turbine arranged in said exhaust passage;

fuel supply means for forming an air-fuel mixture fed into the combustion chamber;

primary valve means arranged in said intake passage and opened in accordance with an increase in the level of the load of the engine;

secondary valve means arranged in said intake passage at a position located downstream of said primary valve means and said compressor;

an auxiliary intake passage having an inlet and an outlet which is connected to said intake passage located down-

stream of said secondary valve means, said inlet being connected to a portion of said intake passage which is located upstream of said secondary valve means and downstream of said primary valve means and said compressor; and

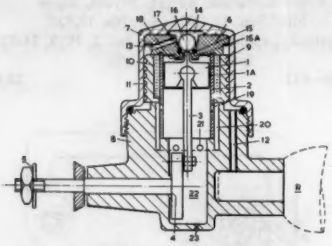
means for actuating said secondary valve means in response to changes in pressure produced in the portion of said intake passage from vacuum to above atmospheric pressure, to gradually open said secondary valve means from a closed position to a full open position in accordance with an increase of the pressure from vacuum to atmospheric pressure and to gradually close said secondary valve means from the full open position to a partially open position in accordance with an increase of the pressure from atmospheric pressure to above atmospheric pressure, whereby the air passes through said auxiliary intake passage to the combustion chamber when the pressure of the portion of said intake passage is vacuum, the air passes through said primary intake passage thereto when the pressure of the portion of said intake passage is atmospheric pressure, and the air passes through both said auxiliary intake passage and said primary intake passage thereto when the pressure of the portion of said intake passage is above atmospheric pressure.

4,318,274

GAS-OPERATED MOTORS

James A. Farrer-Halls, Hurst, England, assignor to BOC Limited, London, England

Filed Mar. 30, 1979, Ser. No. 25,692
Int. Cl.³ F01K *25/10*
U.S. Cl. 60—671 **9 Claims**



1. A gas operated motor comprising means for defining a cylindrical working chamber having a piston reciprocable therein; means for defining a generally cylindrical chamber which surrounds said working chamber and is capable of being charged with a buffer substance which releases heat during operation of said motor; and means for defining a tortuous, generally helical passage in heat conductive relation with said buffer substance and which passage (1) surrounds said chamber capable of being charged with said buffer substance and (2) is in communication with said working chamber such that said gas is superheated upon being supplied through said passage in heat conductive relation with said buffer substance prior to introduction of said gas into said working chamber during operation of said motor.

4,318,275

ATMOSPHERIC THERMAL ENERGY CONVERSION SYSTEM

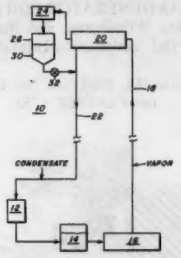
Melvin H. Brown, Freeport, and William H. Tingle, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 2, 1980, Ser. No. 155,464
Int. Cl.³ F03G *7/04*
U.S. Cl. 60—675 **5 Claims**

1. A method of providing useful work utilizing the difference between higher and lower elevations and an attendant difference in temperature, comprising the steps of:

providing a working medium comprised of more than one component, the components having different temperature values at which they vaporize and condense,

condensing vapors of the working medium at the location of the higher elevation, and directing the same under the force of gravity to means capable of utilizing the medium in liquid form to produce useful work,



the working medium in liquid form absorbing heat at the location of the lower elevation to produce the vapors,

directing the vapors from the lower elevation to the higher elevation for the condensing step, and

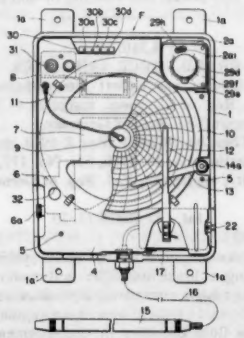
adjusting the composition of the working medium in response to changes in ambient temperatures to provide a working medium having maximum efficiency in directing the vapors the distance between the lower and higher elevations.

4,318,276

SELF-REGISTERING TEMPERATURE CONTROL DEVICE

Koji Sato; Osamu Koyatsu; Takumi Okitsu; Yoshio Harada, and Yuji Yamamura, all of Tokyo, Japan, assignors to Kabushiki Kaisha Saginomiya Seisakusho, Tokyo, Japan

Filed Feb. 6, 1980, Ser. No. 118,906
Int. Cl.³ G02B *23/00*; G05D *23/00*
U.S. Cl. 62—126 **6 Claims**



1. A self-registering temperature control device used for a refrigerating system comprising:

an open-top housing;

a base plate provided within said housing;

an electronic control section mounted on said base plate for controlling air temperature in a refrigerated chamber;

a face plate to cover the open-top housing;

an automatic temperature recording section to sense and record the controlled air temperature, including a re-

cording chart rotatably mounted on an outer surface of the face plate, a tuning fork motor carried by the base plate, a gear reducer carried by the base plate and operatively connected with the motor, a battery carried by the base plate for operating the motor, and means for connecting said chart and said gear reducer; and

a voltmeter provided on the outer surface of the face plate and connected with said battery.

4,318,277

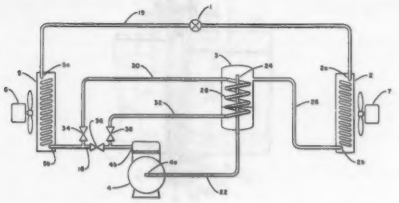
NON-REVERSE HOT GAS DEFROST SYSTEM

Peter L. Cann, Canastota; Richard J. Duell, and Donald J. Casler, both of Syracuse, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 947,361, Oct. 2, 1978, Pat. No. 4,246,760. This application Jun. 16, 1980, Ser. No. 159,521

Int. Cl.³ F25B *47/00*

U.S. Cl. 62—278 **3 Claims**



1. A refrigeration system having a cooling mode of operation and a defrost mode of operation wherein heat energy is transferred from refrigerant to the evaporator to melt ice formed thereon which comprises:

a compressor including a compressor outlet and a compressor inlet;

a condenser including a condenser inlet and a condenser outlet;

an evaporator including an evaporator inlet and an evaporator outlet;

means connecting the condenser outlet to the evaporator inlet;

an accumulator having an accumulator inlet connected to the evaporator outlet and an accumulator outlet connected to the compressor inlet;

a heat exchanger mounted within the accumulator and including a supply conduit for supplying refrigerant to the heat exchanger and a discharge conduit for directing refrigerant from the heat exchanger; and

routing means connected between the supply conduit, discharge conduit, condenser inlet and compressor outlet for directing refrigerant directly from the compressor outlet to the condenser inlet in the cooling mode and for directing refrigerant from the compressor outlet through the supply conduit, heat exchanger and discharge conduit to the condenser inlet in the defrost mode of operation whereby heat energy is supplied in the defrost mode from the refrigerant flowing through the heat exchanger to refrigerant in the accumulator.

4,318,278

ICE MAKING MACHINE

John T. Olson, Albert Lea, and Robert K. Westergaard, Alden, both of Minn., assignors to King-Seeley Thermos Co., Prospect Heights, Ill.

Continuation of Ser. No. 921,835, Jul. 3, 1978, abandoned. This application Feb. 19, 1980, Ser. No. 122,737

Int. Cl.³ F25C *5/18*

U.S. Cl. 62—347 **3 Claims**

1. An ice making machine comprising,

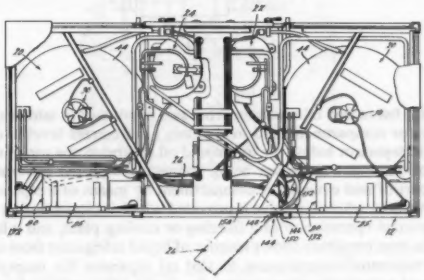
an ice storage compartment having ice inlet means at the upper side thereof and an access opening through which ice may be removed from the interior thereof,

an ice producing enclosure having a width dimension substantially greater than its height dimension disposed directly upon the upper side of said storage compartment and having ice outlet means in the lower side thereof arranged in general vertical registry with said ice inlet means in said storage compartment, whereby ice produced in said enclosure may drop downwardly from said enclosure into said storage compartment,

two pairs of tandemly arranged ice producing mechanisms oriented in side-by-side relation within and adjacent the laterally opposite ends of said ice producing enclosure, each of said pair of mechanisms being generally vertically arranged within said enclosure,

a pair of spaced apart vertically arranged ice chutes associated one with each of said tandemly arranged pair of ice producing mechanisms for transferring ice from said mechanisms toward said ice outlet means in said enclosure,

a refrigeration system including a separate compressor and



evaporator for said tandemly arranged ice producing mechanisms, and a common refrigerant condenser assembly operatively associated with each of said refrigeration systems,

said condenser assembly being generally vertically oriented between said tandemly arranged pairs of ice producing mechanisms and comprising a portion of the vertical forward side of said enclosure, said condenser assembly being hingedly movable about a generally vertical hinge axis between a first position wherein the outer side of said assembly is generally coplanar with said vertical forward side of said enclosure, and a second position arranged at an angle to the plane of said vertical forward side of said enclosure providing access to said refrigerant compressors which are disposed generally between said pairs of mechanisms and behind said condenser assembly, and which includes refrigerant conduit means communicating refrigerant between said condenser assembly and said refrigeration system, and wherein at least a portion of said refrigerant conduit means is adapted for torsional movement upon hinged movement of said condenser assembly about said hinged axis between said first and second positions.

4,318,279

FREEZING OR COOLING PLANT COMPRISING AN OIL SEPARATOR

Hans Gram, Vojens, Denmark, assignor to Brodrene Gram A/S, Vojens, Denmark

Filed Aug. 6, 1980, Ser. No. 175,631

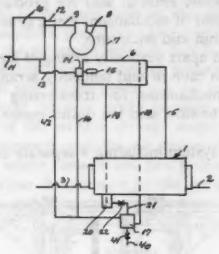
Claims priority, application Denmark, Aug. 13, 1979, 3389/79

Int. Cl.³ F25B *43/02*

U.S. Cl. 62—470 **4 Claims**

1. A freezing or cooling plant including a compressor and an apparatus provided with an evaporator compartment for cooling said apparatus and a condenser, the suction side of said compressor being connected to said evaporator compartment,

and the pressure side of said compressor being connected to said condenser, an oil separator positioned below the lowermost part of said evaporator compartment, said oil separator being connected with said condenser by means of a pipe connection in which a control valve is provided and which opens into said oil separator at a level below the top of said oil separator, so as to feed liquefied and evaporated refrigerant to said oil separator, said oil separator, moreover, being connected with said evaporator compartment via a riser pipe, said riser pipe opening into said oil separator at a level below the top of said oil separator so as to transfer liquefied and evaporated refrigerant fed to said oil separator from said condenser to said evaporator compartment, and to maintain a refrigerant level in said oil separator below the top of said oil separator, the top of said oil separator moreover being connected with the lowermost part of said evaporator compartment by means of a pipe connection, wherein a valve is provided which is closed during the normal operation of said freezing or cooling plant, and which in open condition allows transfer of liquid refrigerant from said evaporator compartment to said oil separator for emptying said evaporator compartment for liquid refrigerant and stopping cooling of said apparatus.



4,318,280

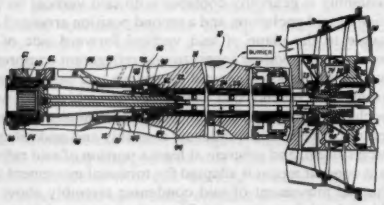
DUAL PROPERTY SHAFT

James R. Williams, Martinsville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 19, 1980, Ser. No. 131,656

Int. Cl.³ F16C *1/00*; F04B *17/00*

U.S. Cl. 64—1 S **4 Claims**



3. A power turbine rotor shaft construction having an increased fundamental bending vibration mode comprising an outer shell having a connector flange at one end and a splined connector at the opposite end, a central opening extending through said outer shell, an entrance segment of said opening being of increased I.D. from said one end of said outer shell, said outer shell having an annular abutment formed at one end of said entrance segment, a tubular insert having an outside diameter tightly fit in contact with the inner surface of said outer shell between said one end of said shell and said annular abutment, said sleeve insert having a modulus of elasticity greater than that of said outer shell and having a density lower than that of said outer shell to produce stiffening of said outer shell whereby its fundamental bending vibration mode is increased without excessively increasing the weight of the overall shaft construction.

4,318,281

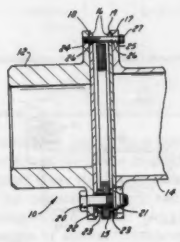
METHOD OF DYNAMICALLY BALANCING A FLEXIBLE TORQUE TRANSMISSION COUPLING

Donald B. Cutler, Warren, and Dennis J. Corey, Youngsville, both of Pa., assignors to Rexnord Inc., Milwaukee, Wis.

Filed May 23, 1980, Ser. No. 152,906

Int. Cl.³ F16C *3/00*

U.S. Cl. 64—1 V **24 Claims**



1. The method of rigidifying the normally flexible joint of a flexible torque transmission coupling comprising the step of axially compressing the joint of said coupling.

4,318,282

TRANSMISSION FOR AN AUTOMOBILE VEHICLE COMPRISING TWO SLIDABLE HOMOKINETIC JOINTS

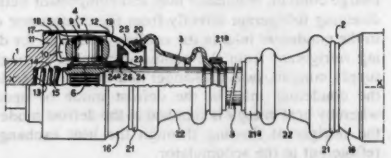
Michel A. Orain, Conflans-Ste. Honorine, France, assignor to Glaenzer Spicer, Poissy, France

Filed Nov. 30, 1979, Ser. No. 99,022

Claims priority, application France, Dec. 14, 1978, 78 35184

Int. Cl.³ F16D *3/30*

U.S. Cl. 64—21 **7 Claims**



1. A transmission comprising a driving element, a driven element, a floating intermediate shaft, two friction-free slidable homokinetic joints respectively connecting opposed ends of the intermediate shaft to the driving element and the driven element, each joint comprising means for limiting axial movements employing a continuous end-of travel contact, and elastically yieldable means for centering the intermediate shaft in a mean axial position relative to the two joints, each of said joints being a tripod joint comprising three radial arms on which arms rollers are rotatively mounted with interposition of needles.

4,318,283

TORSIONAL VIBRATION DAMPER ASSEMBLY

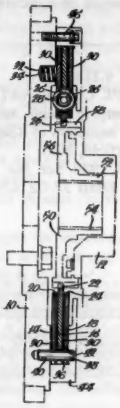
Willis E. Windish, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/01086, § 371 Date Dec. 13, 1979, § 102(e) Date Dec. 13, 1979, PCT Pub. No. WO81/01731, PCT Pub. Date Jun. 25, 1981

PCT Filed Dec. 13, 1979, Ser. No. 144,147

Int. Cl.³ F16D 3/14

U.S. Cl. 64—27 C 4 Claims



1. A vibration damping assembly adapted to be interposed between an engine flywheel (10) and a transmission (12) or the like comprising:

at least three plates (14,15,18) in side by side relation;

friction material (30) at the interface of said plates;

aligned holes (26) in said plates;

spring assemblies (28) in said holes and engaging each of said plates;

means (34) biasing said plates and said friction material into a pack;

means (38,44,46) holding said pack in assembled relation and limiting relative movement of said plates; and

aligned central apertures (20,22,24) in said plates, the central plate (16) in said pack having its central aperture (22) smaller than the central aperture of the adjacent plates and provided with radially inwardly directed splines (24) having an axial length substantially no greater than the thickness of said central plate for slidably receiving mating splines on a shaft, coupling, or the like.

4,318,284

SHEAR PIN COUPLING

Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

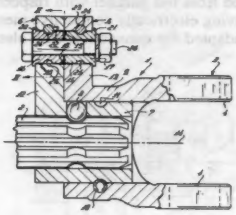
Filed Feb. 16, 1979, Ser. No. 12,728

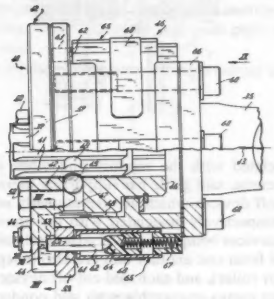
Claims priority, application Netherlands, Feb. 17, 1978, 7801794; Jan. 31, 1979, 7900755

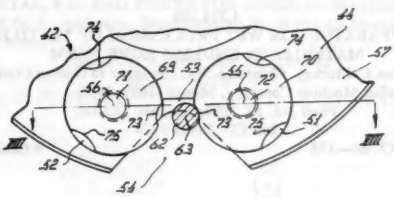
Int. Cl.³ F16D 3/56, 7/00

U.S. Cl. 64—28 R 28 Claims

1. A shear pin coupling for driving use comprising two portions that are relatively rotatable about a common axis, said portions being interconnected for rotation in common by overload shearing means, said shearing means including at least one shear pin and a curved contact surface that engages said pin, means setting the amount of contact between said surface and said pin, said contact surface including at least one cylindrical cutting element and the center line of the shear pin being







located a distance from the center line of said cutting element, means fixing said contact surface against displacement.

4,318,285

APPARATUS FOR THE POSITIVE DELIVERY OF THREAD TO CIRCULAR KNITTING MACHINES

Kurt A. G. Jacobsson, Ulricehamn, and Egon Johansson, Asunden, both of Sweden, assignors to Aktiebolaget IRO, Ulricehamn, Sweden

Filed Jun. 22, 1979, Ser. No. 51,188

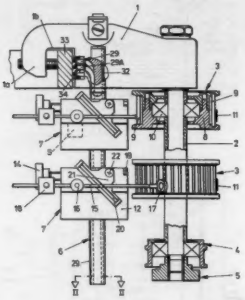
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1978, 2828427

Int. Cl.³ D04B 15/48, 35/14

U.S. Cl. 66—132 T 10 Claims

1. In an apparatus for the positive delivery of thread to a circular knitting machine having a plurality of movable belts which are positioned at different heights, said apparatus including a plurality of conveyor rollers which are associated with the belts and are supported on a machine support ring by means of a holder, and a plurality of cut-off devices which, when the thread tension lessens, moves the respective thread from its conveying position, in which it is movably clamped between one of the belts and its respective conveyor rollers, into a rest position, in which it lies outside of the belt, comprising the improvement wherein a number of said conveyor

rollers corresponding to a number of said belts are individually but coaxially rotatably supported about a common axis defined by a support which is mounted on and projects from the holder, and an elongated guide bar is secured on the holder sidewardly spaced from but parallel with respect to said axis, said guide bar having electrically conductive means extending therealong and adapted for connection with electrical power



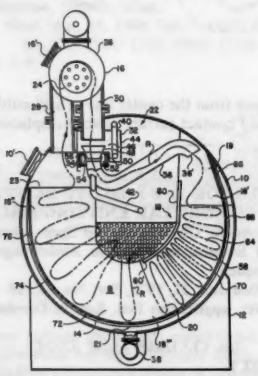
means associated with the support ring when the holder is mounted thereon, said guide bar supporting thereon a number of said cut-off devices which are elevationally adjustable and which are respectively associated with the conveyor rollers, the cut-off devices being individual structural units which are independent from one another and are also independent from the conveyor rollers, and each said cut-off device having electrical contact means engageable with said conductive means.

4,318,286

APPARATUS FOR WET PROCESSING OF TEXTILE MATERIAL IN ENDLESS ROPE FORM

William C. Sturkey, Charlotte, N.C., assignor to Gaston County Dyeing Machine Company, Mount Holly, N.C.

Filed Jul. 15, 1980, Ser. No. 169,145
Int. Cl.³ D06B *3/28*
U.S. Cl. 68—178 **8 Claims**



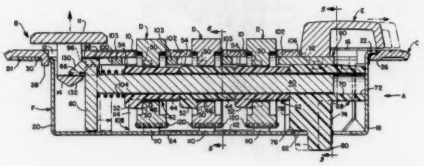
1. Apparatus for wet processing textile material in endless rope form comprising a vessel for containing a treating bath of processing liquid, rope storage means disposed within said vessel for transiently storing in the treating bath a plaited accumulation of a major portion of the rope, said rope storage means defining a curved rope path extending downwardly from an inlet end at one side of said vessel to a lowermost point within said treating bath and upwardly therefrom to an outlet end at the other side of said vessel, said rope storage means including a partially perforate outer wall which extends along the entire extent of said curved path and an imperforate inner wall extending in spaced relation to said outer wall along a portion of said curved path beginning adjacent said inlet end and terminating within said treating bath upstream of said lowermost point of said curved rope path, and means for circulating the rope through said treating bath by progressively withdrawing the rope from said plaited accumulation at said outlet end of said curved rope path and returning it to said plaited accumulation at said inlet end of said curved rope path under the entraining influence of a moving cycled portion of said processing liquid.

4,318,287

SCRAMBLE-TYPE COMBINATION LOCK

Richard C. Remington, Pompton Plains, and Lazlo Bako, Woodcliff Lake, both of N.J., assignors to Kidde, Inc. (Presto Lock Company Division), Garfield, N.J.

Filed May 13, 1980, Ser. No. 149,520
Int. Cl.³ E05B *37/02, 65/52*
U.S. Cl. 70—71 **20 Claims**



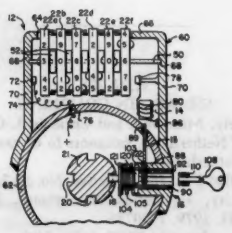
1. A combination lock comprising latch element means movable between latched and unlatched positions, a shaft connected to said latch element means, a plurality of combination dials, means for rotatably supporting the dials on the shaft, manually actuated means coupled to said latch element means and capable of moving said latch element means to its unlatched position, while concurrently moving said shaft axially, only when the dials are set on combination, the coupling between said manually actuated means and said latch element means including means enabling the latch element means to move to its unlatched position independently of said manually actuated means.

4,318,288

STEERING COLUMN LOCK

Sultan A. Rifat, 159 Gelston Ave., Brooklyn, N.Y. 11209

Filed Apr. 30, 1979, Ser. No. 34,336
Int. Cl.³ B60R *25/02*; E05B *25/00, 47/06, 65/12*
U.S. Cl. 70—252 **6 Claims**



1. In a locking mechanism for a steering column of a vehicle having an energy source with a pair of terminals, said column including an outer casing and a concentric shaft having a notch therein, said locking mechanism being of the type including a locking member movable between a locked position wherein said locking member is disposed in said notch for restricting

rotation of said shaft relative to said casing and an unlocked position wherein said locking member is out of said notch and said shaft is rotatable relative to said casing, the improvement comprising:

a plurality of discs having axially aligned through apertures therein, each of said discs having an electrically conductive member extending therethrough;

a supporting shaft extending through said apertures, said discs being freely rotatable about said supporting shaft;

a housing having an opening therein, means for securing said supporting shaft in said housing with the peripheries of of said discs extending through said opening;

means for connecting one of said electrically conductive members to one of said terminals and another of said electrically conductive members to the other of said terminals whereby said energy source, said connecting means and said contacts define a circuit, said circuit being closed when said electrically conducting members are aligned and open when said electrically conducting members are non-aligned;

a solenoid disposed in said circuit and responsive to said energy source;

an armature arranged for movement towards said solenoid when said circuit is closed and away from said solenoid when said circuit is open;

a sleeve extending through said casing below said armature, said sleeve having a through aperture therein in axial alignment with said armature in its range of movement;

a body having a pair of spaced holes disposed in said sleeve and having one end secured to said locking member, said body having a keyway and being movable in said sleeve between a first position wherein said locking member is in said locked position and one of said spaced holes is aligned with said aperture, said one spaced hole communicating with said keyway, and a second position wherein said locking member is in said unlocked position and the other of said spaced holes is aligned with said aperture, whereby when said circuit is open, said armature extends through said aperture and one of said aligned holes, said armature extending into said keyway when said aligned hole is said one hole;

a lever secured to said body for movement between an extended position wherein the lever protrudes outside the body and a retracted position wherein the lever is fully received in the body, said lever abutting the end face of said sleeve when said lever is in said extended position and said body is in said first position for blocking axial movement of said body; and

a key insertable in said keyway in moving said lever to said retracted position.

4,318,289

PIPE CUTTING METHOD AND APPARATUS

Homer L. Eaton, Leucadia, Calif., assignor to Eaton Leonard Corporation, Carlsbad, Calif.

Division of Ser. No. 885,329, Mar. 10, 1978, Pat. No. 4,232,813. This application Jan. 9, 1980, Ser. No. 110,677

Int. Cl.³ B21D *7/04*

U.S. Cl. 72—131 **12 Claims**

1. Pipe bending apparatus comprising

a support,

a bend die rotatably mounted on said support,

means for feeding a pipe and advancing it toward said bend die,

clamp die means mounted on said support for rotation with said bend die for bending pipe around said bend die, and

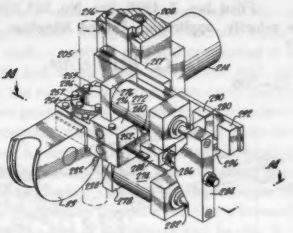
means for severing a portion of said pipe after it has been bent, said severing means comprising

a bolster mounted on said support for motion in a path toward and away from said bend die,

means for driving said bolster along said path,

a cutting clamp assembly movably mounted on said support and adapted to surround said pipe adjacent said bend die,

means for moving said cutting clamp assembly along said support and along said pipe to a position interposed between said bend die and said bolster,



cutter means mounted on said support for motion relative to said cutting clamp assembly and said pipe surrounded thereby, and

means for driving said cutter means to sever said pipe.

4,318,290

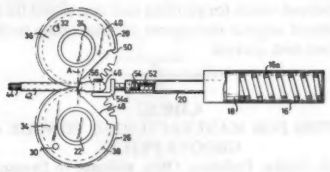
SWAGING MACHINE FOR ELONGATED BODIES OF METAL, E.G. END PIECES FOR WIRES IN BOAT-RIGS

Leif G. E. Anderson, Bjurholmsplan 31, S-116 63 Stockholm, Sweden

Filed Jul. 8, 1980, Ser. No. 166,902

Int. Cl.³ B21B *39/04*

U.S. Cl. 72—205 **6 Claims**



1. Swaging machine for elongated bodies of metal with a longitudinal bore for receipt of an inner member, e.g. end pieces, for wires, cables, metal bars or metal filaments, comprising a base support carrying two parallel shaft journals for rotatable bearing of a pair of rolls each provided with rolling grooves in the circumference and a recess in the circumference enabling the insertion of the metal body or the end piece between the rolls, when the two recesses are situated straight opposite each other, characterized in that the machine is provided with a pulling device (**54,56**; **102**) that is detachably securable at one end of the metal bar or the end-piece (**42**), when this is inserted between the rolls (**34,36**; **60,62**) in their open position (FIG. **6**), and that the pulling device is maneuverable by means of a hand-operated, hydraulic (**16,90,92**), mechanical or electrical driving device for the pulling operation of the metal body or the end piece between the rolls in compression of the metal body or the end piece member and the tight clamping of that member around the inner member inserted therein as a wire (**44**), cable, metal bar or metal filament.

4,318,291
TUBE END FORMING APPARATUS

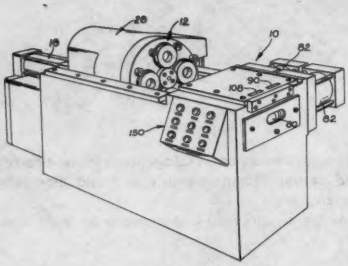
Alfred J. Thompson, Birmingham, England, assignor to Stevens & Bullivant Limited, Birmingham, England

Filed Jun. 2, 1980, Ser. No. 155,516

Claims priority, application United Kingdom, Jun. 8, 1979, 20051/79

Int. Cl.³ B21D *41/04*

U.S. Cl. 72—306 **9 Claims**



1. A tube end forming apparatus comprising a clamping device for rigidly holding a tube against longitudinal movement, a rotary head mounting for reciprocation lengthwise of the longitudinal axis of the tube when held by the clamping device, the axis of rotation of the rotary head being offset relative to said longitudinal axis, the rotary head being provided with a plurality of die mounting openings spaced angularly about said rotation axis, means for indexing the rotary head about said rotation axis to bring respective ones of said openings into alignment with said longitudinal axis, means for reciprocating the rotary head whereby, in use, on one stroke of the head a die is forced over the end of a tube held by the clamping device, characterised in that the indexing means comprises an arm which is moveable angularly about the rotational axis of said head and is provided with a plunger engageable with a plurality of sockets, one at a time, provided in the rotary head and means for pivoting said arm to and fro through predetermined angular increments corresponding to the spacing between said sockets.

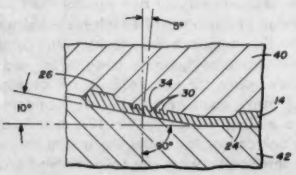
4,318,292
PROCESS FOR MANUFACTURING TONGUE AND GROOVE PLIERS

Reuben M. Beilke, Defiance, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 30, 1981, Ser. No. 259,293

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—356 **5 Claims**



1. A process for manufacturing tongue and groove pliers that includes a pair of plier members that are pivotally connected, each plier member including a handle portion and a nose portion, each nose portion being provided with one or more arcuate projections and each arcuate projection including a mating surface oriented to move said plier members relatively toward each other when in engagement, said process comprising the steps of:

forging said plier members with a bend between said nose and handle portions, forging said arcuate projections on one surface of said nose portion and simultaneously forging a mating surface on each said projection that is disposed at an angle relative to said one surface that is 90° minus an angle that is less than the supplement of the angle of the bend between said nose and handle portions; and,

straightening the plier members to place said mating surfaces in position for engagement whereby said mating surfaces, when in engagement, tend to urge said plier members toward each other.

4,318,293
METHOD FOR POWER CLAMPING WORK PIECES

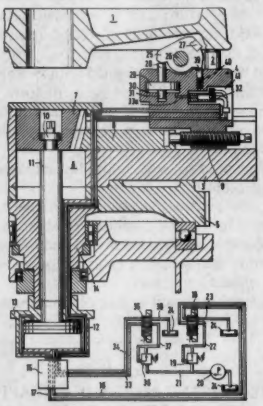
Heymanns Lothar, and Heinz V. Dorp, both of Moenchen-Gladbach, Fed. Rep. of Germany, assignors to Wilhelm Hegenscheidt Gesellschaft mbH, Erkelenz, Fed. Rep. of Germany

Filed Jun. 25, 1979, Ser. No. 51,350

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1978, 2829152

Int. Cl.³ B21D *31/00*; B23B *31/16, 31/18*

U.S. Cl. 72—362 **3 Claims**



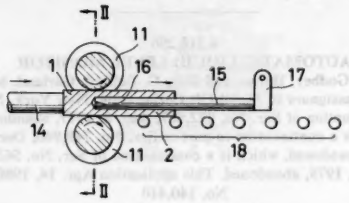
1. A method for radially clamping a work piece at a conical surface or rim of said work piece by means of a power clamping vice, said power clamping vice having clamping tools extendable and retractable in radial directions about an axis, comprising the steps of first positioning the work piece and radially extending the clamping tools for impressing into said conical surface clamping areas having a given inclination relative to said conical surface for facilitating subsequent clamping, disengaging the clamping tools from said work piece by radially retracting the clamping tools, axially repositioning said work piece for correcting the work piece position, repositioning said clamping tools in the axial direction a distance at least equal to the distance of the repositioning of the work piece, and then clamping said work piece at said clamping areas by radially extending the clamping tools into engagement with said inclined clamping areas whereby a component of the force in the radial direction is resolved in the axial direction to hold the work piece in the corrected position.

4,318,294

METHOD OF MANUFACTURING SEAMLESS METAL PIPES AND TUBES

Seishiro Yoshiwara, and Hirokichi Higashiyama, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 19, 1979, Ser. No. 105,746
Claims priority, application Japan, Dec. 29, 1978, 53-161969; Jan. 31, 1979, 54-9081
Int. Cl.³ B21B 17/06
U.S. Cl. 72—370 6 Claims



1. In a method of manufacturing seamless metal pipes and tubes having the steps of piercing a solid bloom by passing it through a set of rolls and over a mandrel carrying a piercing plug at the leading end thereof, and then elongating the resulting hollow cylindrical bloom by passing it through a rotary elongating mill, the improvement which comprises:

using as a mandrel for piercing the solid bloom a mandrel having a diameter substantially equivalent in size to that of the piercing plug and piercing the solid bloom into a hollow cylindrical bloom having a closed end;

in the elongating step, feeding the closed-end hollow bloom with said piercing mandrel remaining therein into the rotary elongating mill with the closed end of the bloom foremost for thereby keeping the cylindrical hollow bloom closed during the time this step is being carried out; and

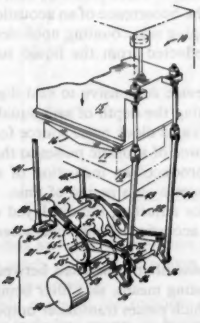
pushing said mandrel until the plug has at least passed the point at which the closed end of the hollow bloom clears the delivery end of the rotary elongating mill.

4,318,295

DRIVING ASSEMBLY FOR POWER PRESS PRODUCING SLOW-DOWN ON CLOSURE OF DIES

William E. Sindelar, Darien, Ill., assignor to Danly Machine Corporation, Chicago, Ill.

Filed May 27, 1980, Ser. No. 153,718
Int. Cl.³ B21J 9/18
U.S. Cl. 72—450 4 Claims



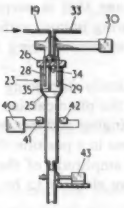
1. In a power metal-forming press of the underdrive type the combination comprising a press frame having a base supporting a bed and having a driving assembly in the base, a slide in the frame vertically reciprocable with respect to the bed between an upraised position and a bottom position, the slide and the bed having provision for mounting of upper and lower cooperating dies, a rocker shaft journalled in the base and extending longitudinally along one side thereof, a pull rod arm on the rocker shaft, a vertical pull rod connected at its upper end to the slide and at its lower end to the pull rod arm, a rocker arm on the rocker shaft, the press drive assembly having a main drive gear radially spaced from the rocker arm and carrying an eccentric, means for rotating the main drive gear, a pitman having a central portion pivotally engaging the eccentric, the pitman having a short arm extending generally in the direction of the rocker arm and having a long arm extending in a direction generally opposite thereto, a connecting link pivoted to the short arm of the pitman and having its opposite end pivotally connected to the rocker arm, the connecting link having a reference orientation when the slide is in its bottom position, and an auxiliary link pivoted at one end to the end of the long arm of the pitman and pivoted at the other end to the frame, the long arm being so angled with respect to the position of the connecting link when the latter is in its reference orientation and the pivot on the frame being so located that upon rotation of the main drive gear the pivot on the short arm of the pitman traces a generally elliptical path having a major axis which bears an acute angle to the reference orientation of the connecting link with the result that the slide moves relatively slower as it approaches its bottom position and relatively faster as it leaves its bottom position.

4,318,296

SAMPLING EQUIPMENT FOR SEDIMENTATION RATE MEASURING

David S. Parker; Stephen R. Shaw, and Robert Hudson, all of Burton-on-Trent, England, assignors to Coal Industry (Patents) Limited, London, England

Filed Apr. 28, 1980, Ser. No. 144,113
Claims priority, application United Kingdom, May 23, 1979, 18035/79
Int. Cl.³ G01N 15/04
U.S. Cl. 73—61.4 13 Claims



1. Sampling equipment for use in sensing the settling rate of a suspension, comprising a metering device for taking a sample of the suspension, the metering device comprising a sampling chamber for the sample, timer means for controlling control means to stop the feed of suspension to the sampling chamber, means for retaining the height of the sample at a preselected level in the sampling chamber during a settling period, and detector means for detecting when a boundary level defined by the settling solids in the sample reaches a further preselected level, the timer means determining the period of time elapsing between the start of the settling period when the height of the sample is at the preselected level and the time when the detector means detects the boundary level has reached the further preselected level, in which the timer means compares the actual settling period elapsing between the start of the settling period and the time when the detector means detects the

boundary level has reached the further preselected level against a preselected optimum desired settling period.

4,318,297

PENDULUM-TYPE FILM HARDNESS MEASUREMENT TESTER

Christian Zaffran, Elancourt; Jean-Claude Ser, Beynes, and Jean-Pierre Yquel, Colombes, all of France, assignors to L'Oreal, Paris, France

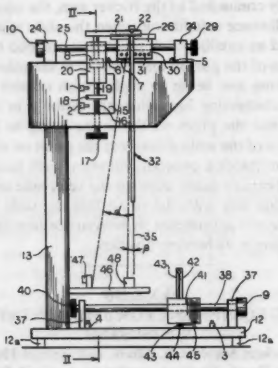
PCT No. PCT/FR78/00042, § 371 Date May 14, 1979, § 102(e) Date May 14, 1979, PCT Pub. No. WO79/00322, PCT Pub. Date Jun. 14, 1979

PCT Filed Nov. 23, 1978, Ser. No. 38,634

Claims priority, application France, Nov. 25, 1977, 77 35500

Int. Cl.³ G01N *3/50*

U.S. Cl. 73—78 **66 Claims**



1. Apparatus for measuring the hardness of film and the like comprising:

a moving element resting on two bearing points on the film to be tested;

a plate supported by the apparatus for carrying said film;

the said moving element being capable of a pendular oscillating motion in a plane that is perpendicular to the line joining the said bearing points, with

the assembly of said apparatus being further characterized by therein having:

a first means for vertically displacing the said moving element in relation to the plate carrier of the film;

a second means for bringing said moving element to one end of its pendular course in a position that corresponds to an angular oscillating amplitude of the value of α thereby allowing the moving element to be momentarily kept in this position;

a third means for displacing the plate carrying the film to be tested in relation to said moving element when such moving element is not resting on the film; and

a fourth means for counting the number of pendular oscillations of the moving element, said fourth means being further characterizable in that

the count thereby made of the number of pendular oscillations of said moving element is effected only on oscillations which have an amplitude which is higher than the value of β with the result of such count being either stored or printed;

said apparatus assembly also including and being comprised of:

an electronic device means operable after manual starting of a cycle of measurements for effectuation of a sequence which is constituted, on one hand, of causation of said moving element to bear on said plate carrier of the film to be tested and, on the other hand, positioning of the moving element at one end of its course of oscillation, whereby and whereupon

said moving element is released so as to then:

initially count the number of oscillations up to angular amplitude β and to store or print the result of such count; and

thereafter and finally, left said moving element in order to displace the said film carrier plate in relation to the said moving element and thereupon to start a subsequent cycle of measurements,

the sequence of measurement cycles being stopped when the displacement of the print carrier plate has brought the said plate into a predetermined end position.

4,318,298

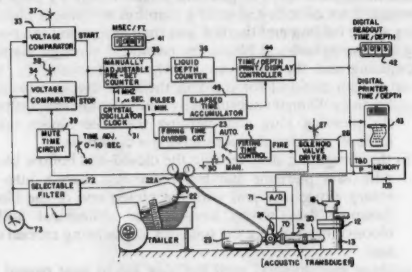
AUTOMATIC LIQUID LEVEL MONITOR

John K. Godbey, Dallas, and Billy G. Ballard, Garland, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 822,507, Aug. 8, 1977, abandoned, which is a continuation-in-part of Ser. No. 749,940, Dec. 13, 1976, abandoned, which is a continuation of Ser. No. 563,249, Mar. 28, 1975, abandoned. This application Apr. 14, 1980, Ser. No. 140,410

Int. Cl.³ G01S *9/66*

U.S. Cl. 73—155 **27 Claims**



25. Apparatus for determining the location of the liquid surface in a well having a casing with a pump suspended from a tubing string disposed within said casing comprising:

a source of acoustic pulses coupled to said well;

a transducer coupled to said well producing an electric signal in response to the occurrence of acoustic pulses in said well;

a clock pulse source;

digital counting means;

gating means responsive to the output of said transducer for starting the counting of clock pulses by said digital counting means upon the occurrence of an acoustic pulse in said well and for stopping said counting upon detection of the acoustic pulse reflected from the liquid surface in said well;

a digital readout device responsive to said digital counting means for indicating the depth of said liquid surface;

means responsive to said clock pulse source for repetitively actuating said source of acoustic pulses so that said digital readout device produces an indication of said depth at predetermined times over a period of time;

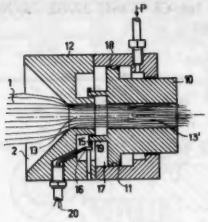
calibration means for adjusting the displayed depth indication of different acoustic velocity characteristics of said well; and

a selectable band pass filter connected between said transducer and said gating means, said filter being settable for first band pass which passes transducer outputs representing acoustic pulses reflected from the liquid surface of said well and a second band pass which passes transducer outputs representing acoustic pulses reflected from collars in said tubing string.

4,318,299
MEASURING FUNNEL FOR DETERMINING THE TENSION OF SLIVERS

Richard Morf, Uster, Switzerland, assignor to Zellweger Uster Ltd., Uster, Switzerland

Filed Mar. 4, 1980, Ser. No. 127,059
Claims priority, application Switzerland, Apr. 6, 1979, 3290/79
Int. Cl.³ G01L *5/04*; G01N *33/36*
U.S. Cl. 73—160 **17 Claims**

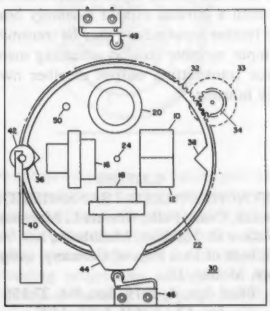


1. A measuring funnel for determining the tension of fiber slivers, comprising a stationary component having a first bore therein through which said fiber sliver passes and a movable component which moves in a translational manner with respect to the stationary component, the movable component having a second bore therein coextensive with said first bore and being arranged to be displaced from a preselected position by the passage of the fiber sliver through said second bore, and balance means for applying a predetermined force to said movable component to counteract the displacement thereof by a fiber sliver of selected cross section.

4,318,300
LOW COST SELF ALIGNING STRAPDOWN ATTITUDE AND HEADING REFERENCE SYSTEM

Robert W. Maughmer, Calabasas Park, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Continuation of Ser. No. 965,004, Nov. 30, 1978, abandoned. This application Jan. 14, 1980, Ser. No. 112,247
Int. Cl.³ G01C *21/00*
U.S. Cl. 73—178 R **11 Claims**



1. A heading and attitude reference system for use in a vehicle having pitch, roll and yaw axes designated x, y and z, respectively, comprising:

a turntable mounted for rotation about the z axis of said vehicle including means for positioning said turntable in a predetermined zero degree position and means for turning said turntable from said zero position into its 180 degree position;

at least two angular rate sensors mounted on said turntable with their sensing axes parallel to x, y and z;

at least two accelerometers mounted on said turntable with their sensing axes parallel to x and y;

means for initially storing signals from said rate sensors and accelerometers when said vehicle is substantially stationary and said turntable is in its zero position;

means for controlling the turning of said turntable from its zero degree into its 180 degree position;

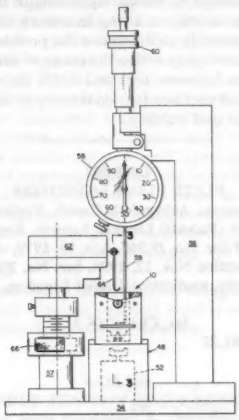
means for combining signals from said rate sensors and accelerometers when said turntable is in its 180 degree position with said stored signals to produce sum and difference signals; and

means for combining said sum and difference signals to produce accelerometer and rate sensor initial bias signals, rate sensor scale factor signals, and signals indicative of the initial attitude angles between said x, y and z axes and a reference set of coordinates.

4,318,301
APPARATUS FOR MEASURING PAPILLARY MUSCLE CONTRACTILITY

Richard E. Justice, Gloucester; Gene A. Grindlinger, Brookline, and Herbert B. Hechtman, Chestnut Hill, all of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Jun. 23, 1980, Ser. No. 162,191
Int. Cl.³ A61N *1/00*; A61B *10/00*
U.S. Cl. 73—432 R **4 Claims**



1. Apparatus for measuring papillary muscle contractility when subjected to electrical stimulus while immersed in a bathing liquid such as plasma or aqueous polyelectrolyte solution which comprises

a first chamber for containing test bathing liquid,

means for mounting a papillary muscle specimen in fixed location within said chamber in said bathing liquid,

a pair of spaced apart electrodes mounted within said chamber at opposite sides of said location to apply an electrical stimulus to said specimen,

means for controlling the temperature of said test bathing liquid,

means for oxygenating said test bathing liquid comprising a second chamber adjacent the first adapted to contain a supply of oxygen gas, and a membrane permeable to gaseous oxygen and impermeable to said test bathing liquid, said membrane being mounted between said first and second chambers with one face arranged to contact said bathing liquid and the opposite face arranged to contact said gaseous oxygen, and

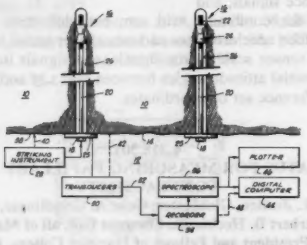
means for measuring the contractible response of said muscle specimen when subjected to electrical shock.

4,318,302

METHOD OF DETERMINING MINE ROOF STABILITY

Dai-Shik Choi, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Dec. 13, 1978, Ser. No. 969,079
Int. Cl.³ F16B *31/02*
U.S. Cl. 73—761 1 Claim



1. A method of testing mine roof stability, comprising the steps of:

exciting the mine roof bolt to vibration at the natural occurring frequencies by normal tightening of the roof bolt;

detecting the natural occurring frequency vibrations; and

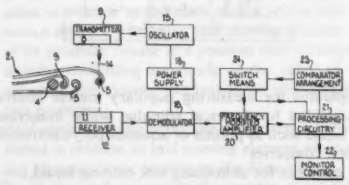
analyzing spectrally to determine the predominance of frequency distribution within the range of natural occurring frequencies between zero and 1,000 Hz. to provide an indication of roof bolt tension thereby to derive an indicator of mine roof stability.

4,318,303

FLUID FLOW MONITORS

Pete F. Harrington, Ashby-de-la-Zouch, England, assignor to Coal Industry (Patents) Limited, London, England

Continuation of Ser. No. 29,965, Apr. 13, 1979, abandoned. This application Nov. 12, 1980, Ser. No. 206,230
Claims priority, application United Kingdom, Apr. 26, 1978, 16473/78
Int. Cl.³ G01F *1/32*
U.S. Cl. 73—861.23 11 Claims



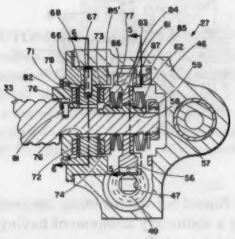
1. A fluid flow monitor comprising a transducer means which is disposable in a fluid flow, the transducer means being constructed to derive an electrical signal including modulations associated with vortices produced in the fluid flow, processing circuit means for processing the electrical signal to remove spurious signals from the electrical signal and derive a further electrical signal related to the fluid flow in response to control signals, and comparator means for comparing said further electrical signal with preselected reference signals, the comparator means having an output dependent upon the comparison with said preselected reference signals, and control means connected to the processing circuit means and the comparator means for providing control signals to the processing circuit means in response to the output of the comparator means.

4,318,304

FORCE LIMITING DEVICE

David J. Lang, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Apr. 11, 1980, Ser. No. 139,326
Int. Cl.³ F16H *27/02, 29/20*
U.S. Cl. 74—89.15 18 Claims



1. A force limiting assembly including in combination:

a force transmitting reciprocating output member carried by an actuating member mounted at one end for rotation in a force limiting assembly housing;

a power input member secured to said actuating member in said housing, said force transmitting reciprocating member capable of being driven in a direction away from and towards said assembly housing by said actuating member; and

said assembly having a sudden release means secured to said assembly housing and mechanically suddenly releasably secured to said actuating member to thereby permit said actuating member to move axially into said housing when an axial force present in said actuating member arises while said force transmitting member is being driven away from said assembly housing, and said axial force directed towards said housing exceeds a preset value which results in the sudden release and movement of said actuating member and said power input member into locking cooperation with a portion of said assembly housing, whereupon no further input power may be transmitted from said power input member to said actuating member to drive said force transmitting output member away from said assembly housing.

4,318,305

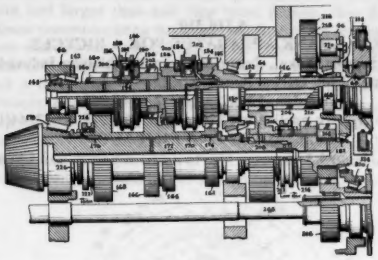
SYNCHRONIZED TRANSMISSION

Peter D. Wetrich, Cedar Falls; Gordon L. Marquart, Jesup, both of Iowa; Volker D. Hückler, Mannheim, and Vasile A. Benedek, Brühl, both of Fed. Rep. of Germany, assignors to Deere & Company, Moline, Ill.

Filed Apr. 4, 1979, Ser. No. 27,156
Int. Cl.³ F16H *3/38, 3/08*
U.S. Cl. 74—339 16 Claims

1. A transmission comprising the combination of a first shaft adapted to be rotatably driven, a first plurality of gears surrounding the first shaft, at least one synchronizer pair coupled to the first shaft and operative to couple a selected one of the first plurality of gears to the first shaft, a second shaft having an outer periphery formed into a second plurality of gears, each of the second plurality of gears meshing with a different one of the first plurality of gears, a third shaft adapted to rotatably

drive a load, means for selectively coupling the second shaft directly to the third shaft, and means for selectively coupling



the second shaft to the third shaft through a gear reduction arrangement.

4,318,306

CENTERING APPARATUS FOR TOOTHED DRIVES

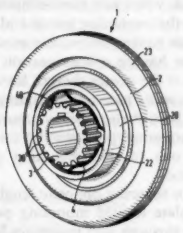
Horst Fischer, Ubstadt-Weiher, Fed. Rep. of Germany, assignor to Sew-Eurodrive GmbH and Co. Süddeutsche Elektromotoren-Werke, Bruchsal, Fed. Rep. of Germany

Filed Aug. 16, 1979, Ser. No. 67,151

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1978, 7825113[U]

Int. Cl.³ F16H *55/30;* F16D *3/76*

U.S. Cl. 74—433 5 Claims



1. Apparatus comprising a drive coupling part having a bore with internal teeth, a drive coupling part having external teeth movable into and out of engagement with said internal teeth by axial movement between the coupling parts, and an endless spring ring having arcuate segments and at least three radially outwardly extending projections arranged at equal spacing about the periphery of the ring, each projection being located between adjacent pairs of arcuate segments; wherein, in the engaged condition of the internal and external teeth, said spring ring is supported with each of said projections engaged within a recess in said bore of the coupling part having internal teeth and with the arcuate segments making contact about substantially the whole periphery of the external teeth, each segment overlying the periphery of a plurality of said external teeth, whereby the coupling parts are centered and held in a manner restricting relative radial movement and chattering between the teeth thereof.

4,318,307

BRAKE OPERATING DEVICE FOR A BICYCLE

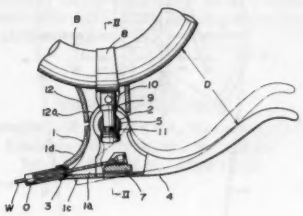
Masayoshi Kine, Osaka, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Apr. 3, 1979, Ser. No. 26,696

Claims priority, application Japan, Apr. 14, 1978, 53/49836[U]; May 16, 1978, 53/66844[U]

Int. Cl.³ G05G *1/00, 1/04*

U.S. Cl. 74—489 3 Claims



1. A brake operating device for a bicycle comprising:

a fixing member fixed to a bicycle handle bar;

a bracket having a brake control lever pivoted thereto about a pivot shaft, said control lever having a grip portion and a support portion supporting a control wire which transmits movement of said lever to bicycle brakes, said bracket having a support portion supporting an outer sheath guiding said control wire, said bracket being pivotally supported relative to said fixing member about said pivot shaft through a position changing means comprising a recess shaped as a circular arc concentric with said pivot shaft provided at one of the opposing surfaces consisting of a surface associated with said fixing member and a surface associated with said bracket and a swollen portion shaped in a circular arc to fit said recess provided at the other of said opposing surfaces, said bracket being adjustable around said pivot shaft to change an angle of said bracket with respect to said fixing member, such that the distance between said grip at said control lever and said handle bar is adjusted by changing the angle of said bracket, and

means provided at said pivot shaft for fixing said pivot shaft to said fixing member and said bracket relative to said fixing member in an adjusted position.

4,318,308

CABLE TENSION REGULATORS

Denis Monteillet, Saint Bartheleny de Vals, France, assignor to Societe Anonyme de Recherches de Mecanique, Saint Vallier sur Rhone, France

Filed Dec. 7, 1979, Ser. No. 101,129

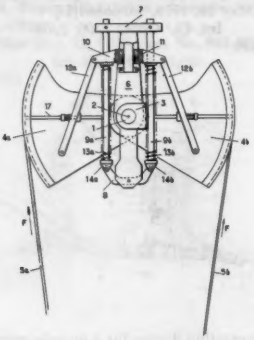
Claims priority, application France, Dec. 13, 1978, 78 35719

Int. Cl.³ F16C *1/10*

U.S. Cl. 74—501.5 R 2 Claims

1. A cable tension regulator comprising a pivotable hub, an operating lever rigid with said hub, two quadrants each having a periphery, resilient means, locking means, two disengageable oneway couplings, and disengagement means, said two quadrants being pivotably mounted on said hub with said periphery of each said quadrant being fixed to a cable for connection to a control element or an element to be controlled, said resilient means causing said quadrants to pivot in the direction corresponding to tensioning of said cables, said locking means locking said quadrants on said hub when an additional traction is exerted on one of said cables by way of said control element and releasing said quadrants when the tensions on said two cables decrease or increase simultaneously, each of said quadrants being pivotably mounted on said hub by means of a respective one of said disengageable one-way couplings which prevents, when in operation, said quadrant from pivoting

under the effect of said resilient means, said disengagement means disengaging said one-way coupling when the respective cable is taut and each of said one-way couplings comprises a substantially radial disengagement rod which is slidably mounted with respect to said respective quadrant, said rod



having an end which can project into a groove defined by said periphery of said quadrant, said coupling being in an active position when said end of said rod projects into said groove and in an inactive position when retracted into said quadrant, there being provided resilient means urging said rod so that said end thereof tends to project into said groove.

4,318,309

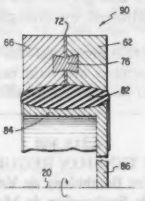
DEFORMED LOCKING CLAMP

Robert C. Bremer, Jr., Brownsburg, Ind., assignor to Wallace Murray Corporation, New York, N.Y.

Division of Ser. No. 952,557, Oct. 18, 1978, Pat. No. 4,242,921. This application Apr. 11, 1980, Ser. No. 139,173

Int. Cl.³ F16F *15/10*

U.S. Cl. 74—574 **1 Claim**



1. A torsional vibration damper of the type having a hub and an inertia ring, the hub and inertia ring coupled to each other by an elastomer member, the hub adapted to be coupled to the crankshaft of an engine, the improvement comprising, the inertia ring being formed of two axially spaced ring parts, each said ring part having at least one annular groove, a ring locking element in the form of a radially extending disc carrying at least one generally axially extending locking key, the axially outermost ends of the locking key being received in, respectively, the said ring part annular grooves, the axially outermost ends of the locking key each being deformed to each define a tang which extends at least partially in a radial direction, the said radially extending disc being under axial compression and thus exerting an axially extending force against the two ring parts to urge them apart, the tangs of the locking key contacting portions of the annular grooves to resist the disc axially directed force, said annular grooves being trapezoidal in longitudinal cross-section, the longest parallel side of each trapezoid being farthest from the junction of the two ring parts, whereby each key end has, in longitudinal cross-section of the damper, the shape of a wedge.

4,318,310

GEAR CRANK APPARATUS FOR A BICYCLE

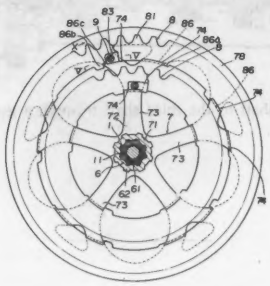
Takashi Segawa, Sakai, Japan, assignor to Shimano Industrial Company, Ltd., Osaka, Japan

Filed Jun. 12, 1979, Ser. No. 47,949

Claims priority, application Japan, Jun. 16, 1978, 53-83244[U]

Int. Cl.³ G05G *1/14*; F16H *55/02*

U.S. Cl. 74—594.2 **3 Claims**



1. A gear crank apparatus for a bicycle comprising:

a crank composed of a crankshaft and a pair of crank arms;

a gear adapter secured to said crank;

at least one chain gear secured to said adapter, said chain gear being formed from an approximately rectangular metallic band-shaped plate wound into a ring shape, said band-shaped plate being equal in length to the peripheral length of said chain gear, the outer peripheral edge of said chain gear formed by said wound band-shaped plate containing a plurality of teeth, at least one of said opposite lengthwise ends of said band-shaped plate being provided with a mounting piece, which overlaps the other of said lengthwise ends when said band-shaped plate is wound in a ring shape, the mounting piece and the other of said lengthwise ends having respective mounting holes;

said gear adapter having a boss portion provided with an engaging hole at the center thereof for engaging with said crank and a support member extending in a radial direction from said boss portion, said support member having a plurality of mounting portions for mounting said chain gear at least one of said mounting portions having a tapped hole; and

a screw means for securing opposite lengthwise ends of said band-shaped plate to said mounting portions said screw means passing through said mounting holes and engaging with said tapped hole.

4,318,311

CENTRIFUGALLY ACTUATED VALVE FOR TRANSMISSION

Phillip J. Ross, Brownsburg, Ind., assignor to General Motors Corporation, Detroit, Mich.

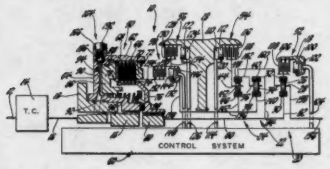
Filed Mar. 31, 1980, Ser. No. 135,656

Int. Cl.³ G05D *13/10*; F16D *25/12*

U.S. Cl. 74—752 C **4 Claims**

1. In a transmission having an input shaft rotatable about a first axis of said transmission, an output shaft, a fluid pressure actuated ratio drive establishing device operative to drivingly connect said input and said output shafts and including valve support means rotatable about said first axis at an angular velocity proportional to the angular velocity of said input shaft, a source of pressurized fluid and means for selectively introducing said pressurized fluid to said drive establishing device, the improvement comprising, means on said valve

support means defining a bore disposed on a second axis substantially perpendicular to said first axis and having a first cross section and an expanded second cross section in juxtaposition with and larger than said first cross section, first fluid port means communicating between said first cross section of said bore and said ratio establishing device, second fluid port means communicating between said first cross section of said bore and a fluid exhaust, third fluid port means communicating between said second cross section of said bore and said ratio establishing device, a valve member disposed in said bore for centrifugal force induced bodily shiftable movement along said second axis during rotation of said valve support means from a closed position in said first cross section of said bore to an open



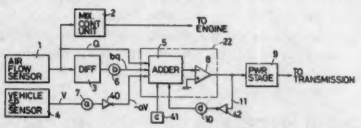
position in said second cross section of said bore, and seal means on said valve member and on said bore operative in the closed position of said valve member to prevent communication between either of said first and said third fluid port means and said second fluid port means and in said open position to permit communication between both of said first and said third port means and said second port means thereby to exhaust said ratio establishing device and disestablish driving connection between said input and said output shafts, said valve member in the open position thereof cooperating with said second cross section of said bore to provide clearance between said valve member and said bore so that pressurized fluid flowing from said third port means to said second port means flows around said valve member.

4,318,312

GEARSHIFT CONTROL SYSTEM FOR AUTOMATIC TRANSMISSIONS USING AIR FLOW SENSOR

Yoshiro Morimoto; Keizaburo Usui, both of Yokohama, and Masanori Mizote, Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 18, 1979, Ser. No. 49,342
Claims priority, application Japan, Jul. 31, 1978, 53-92639
Int. Cl.³ B60K *41/00, 41/06*
U.S. Cl. 74—866 **11 Claims**



1. A gearshift control system for an automatic transmission of an automotive vehicle having an internal combustion engine, said system comprising:

an air flow sensor for sensing the quantity of air taken into the internal combustion engine of said vehicle and for generating a first electrical signal representative of intake air quantity;

a vehicle speed sensor for sensing the speed of said vehicle and generating a second electrical signal representative of vehicle speed;

command signal generating means receptive of said first and second signals from said air flow and vehicle speed sensors for defining a transmission gear change control line between downshift and upshift areas in a two-dimensional coordinate axes system, the sensed intake air quantity being one coordinate axis and the sensed vehicle speed being the other coordinate axis, said command signal generating means being operative to selectively generate downshift and upshift command signals depending on the position of a variable point determined by the sensed intake air quantity and vehicle speed with respect to said gear change control line in said coordinate axes system; and

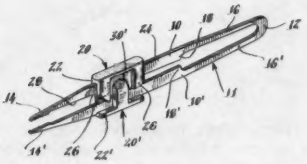
a differentiator receptive of said first signal from said air flow sensor for generating a signal which is a derivative of the sensed intake air quantity, said derivative signal operative to shift said control line.

4,318,313

TWEEZER FORCEPS

John A. Tartaglia, 108 Stoddard Rd., Waterbury, Conn. 06701

Filed Mar. 10, 1980, Ser. No. 128,567
Int. Cl.³ B25B *9/02*; A61B *17/30*
U.S. Cl. 81—43 **4 Claims**



1. In tweezer forceps comprising a spring element having a pair of elongated arms projecting longitudinally from and integral with an end section by which they are joined, said arms being normally spaced throughout their length from said end section to their free ends and having tips adjacent said free ends which are engageable upon flexing said arms toward each other for gripping an object, the improvement wherein

said spring-element is formed from a single sheet of resilient relatively thin sheet material of uniform thickness defining a common plane, the minimum width of said arms in the direction of flex being substantially greater than the thickness of the material, said arms being resiliently flexible edgewise toward each other within said plane,

finger pieces attached intermediate the ends of each of said arms adjacent the outer edge thereof, against which the fingers of the user are pressed in order to flex said arms inwardly to grip an object with the tips of said arms, said finger pieces being of identical configuration so as to be interchangeable on said arms and each having a finger pad with an engagement surface against which the user can press a finger, said finger pad being disposed against said outer edge of said arm and said engagement surface extending transversely of said plane,

each said finger piece including means for aligning the tips of said arms and for maintaining such alignment throughout their movement, wherein said alignment means comprises a first projection on each of said finger pieces extending from said finger pad toward the other finger piece closely adjacent and parallel to one side of the one said arm on which it is mounted, and a pair of projections spaced longitudinally of said one arm and extending from said finger pad closely adjacent the opposite side of such one arm parallel to said first projection, said first projection being positioned intermediate said pair of projections longitudinally of said arm,

said projections on each of said finger pieces extending beyond the inner edge of said one arm for guiding engagement with the corresponding side of the other arm,

said finger pieces being mounted on their respective arms such that said first projection on each is received between said pair of projections on the other, whereby to maintain

alignment of said arms within said common plane in all operating

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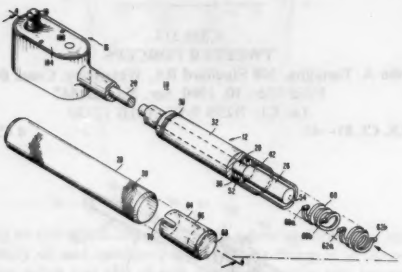
4,318,314

RATCHET WRENCH ASSEMBLY

Ervin J. Furedi, 223 Pleasant Grove Rd., Long Valley, N.J. 07853, and Richard E. Blodgett, 24 Holmesbrook Rd., Basking Ridge, N.J. 07920

Filed Oct. 10, 1979, Ser. No. 83,380
Int. Cl.[3] B25B *17/00*
U.S. Cl. 81—57.29 6 Claims



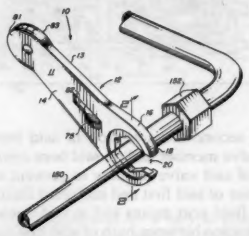
1. A novel ratchet wrench assembly having selectable ratcheting action to rotate a drive stud in either direction which comprises: a drive stud means including a socket stud; a two-position ratchet means, a first portion to effect ratcheting action of said drive stud means in one direction and a second position to effect ratcheting action in another direction; a first gear means fixedly mounted to said drive stud means; a drive shaft including a second gear means for engaging said first gear means; a barrel structure rotatable in either of opposite directions for actuating said drive shaft; a clutch means for bi-directionally engaging and optionally driving said drive shaft in either of opposite directions responsive to rotating said barrel structure; and a handle means including said barrel structure mounted for rotation about said drive shaft whereby rotation of said barrel structure causes the barrel structure to engage said clutch means, and causes the clutch means to engage and thereby rotate said drive shaft and thus cause said drive shaft to drive said gear means which drives said stud means; said clutch means being comprised of a spring housing member, and a spring means positioned on said shaft and including two separate springs having spaced-apart first spring end portions thereof, one said first spring end portion of each of said two separate springs being in contacting relationship with the spring housing member; and said spring housing member being disposed about said spring means; said barrel structure being in engaging relationship with adjacent other second end portions of each of said two separate springs; said spring housing member being partially housed within said barrel structure; rotation force on said handle means serving to cause said barrel structure to tighten said spring means about said shaft to thereby rotate said shaft, the spring means including two helical first and second springs as said two separate springs, said first and second springs being rotatably mounted coaxially to one-another around said shaft, with said adjacent second end portions being engaged intermediately therebetween at engagement points by said barrel structure, the spring being wound in opposite directions relative to said engagement points such that rotating of the barrel structure in either of opposite rotational directions tightens helical turns of one or the other of the first and second springs and simultaneously loosens helical turns of the other remaining one of the first and second springs; and said spring housing member comprising a slot means having first and second slot-forming structure forming first and second slots at locations opposite said spaced-apart first spring end portion of each of the first and second springs, said spring housing being coaxial with said shaft and having an enlarged opening means including through-space-forming structure forming a hole in which the other adjacent ends of the first and second springs are freely movable, said enlarged opening means being disposed at a midportion of and in communication with said slot means wherein juxtaposed said other adjacent second end portions of said first and second springs are disposed within said hole and wherein said remaining first spring end portion of said first and second springs are disposed in said first and second slots respectively.

4,318,315

RATCHET WRENCH WITH RETURN SOCKET

James R. Washburn, 3337 N. 62nd St., Scottsdale, Ariz. 85251

Filed Sep. 8, 1980, Ser. No. 185,195
Int. Cl.[3] B25B *13/00*
U.S. Cl. 81—58.2 5 Claims



1. A split socket wrench comprising:
(a) a body having a handle portion and forward jaws defining an aperture;
(b) a socket drive member rotative within said jaws having a work engaging surface and defining an opening to said work engaging surface aligned with said aperture in an open position;
(c) said socket member further including ratchet wheel means associated therewith and a hub extending circumferentially around said work engaging surface;
(d) pawl means selectively engageable with said ratchet wheel to selectively restrain or permit rotation of said socket member relative to said jaws;
(e) take-up means in said body and including energy storage means coupled thereto to store energy as the take-up means is actuated; and
(f) cable means extending between said socket hub and said take-up means which is payed out and wound about said hub as the wrench is turned in a first direction and which is rewindable in an opposite direction of rotation by said energy storage means when said pawl is released thereby returning said socket member to the open position.

4,318,316

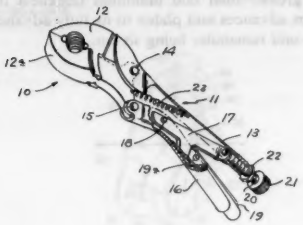
LOCKING PLIERS FOR GRIPPING THREADED HANGER RODS

Charles M. Guilliams, 404 Ward St., Paducah, Ky. 42001

Filed Oct. 12, 1979, Ser. No. 84,074
Int. Cl.[3] B25B *7/02*
U.S. Cl. 81—425 A 4 Claims

1. Locking pliers for gripping threaded hanger rods, or the like, to temporarily support apparatus thereon at a desired level, comprising a pair of enlongated handles, a pair of jaws aligned with said handles in extension thereof, pivot means connecting the jaws to the handles for turning movements to spread opposing jaw surfaces apart to open condition and to turn the said jaw surfaces against each other to closed condition, toggle link means for locking said jaw surfaces in closed condition, and a threaded cavity in each of said surfaces extending entirely across each jaw transversely thereof, the said cavities being aligned with each other and being so formed that

in closed and locked condition of the jaws they together define a cylindrical recess having standard screw threads capable of gripping the complementary threads of the hanger rod and temporarily supporting apparatus thereon and alternatively permitting rotation of the locked pliers about the hanger rod to



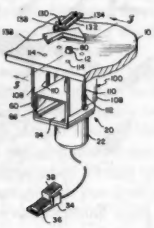
threadedly move the pliers up or down the rod for changing the support level, one of said jaws being provided with a pair of guides fixed thereto and extending over and embracing the second jaw so as to hold the two jaws aligned in the same plane during their movement to closed position.

4,318,317

APPARATUS FOR ASSEMBLING TROPHIES

Lowell B. Zerbe, Columbus, Ind., assignor to Earl Nonnemann, Cumberland, Md.

Filed Oct. 23, 1980, Ser. No. 199,979
Int. Cl.³ B25B *23/14*
U.S. Cl. 81—467 **12 Claims**



1. An apparatus for assembling the components of a trophy, comprising means for engaging a member for interconnecting the components, means for driving the engaging means in at least one direction to advance the interconnecting member and thereby connect the components together, means for coupling the driving means to the engaging means, means for adjustably mounting the driving means and coupling means to a working surface for supporting the components, and means for projecting the engaging means through the working surface, the coupling means providing a torque-limited connection between the driving means and the engaging means in the one direction to prevent the application of excessive force to the interconnecting member.

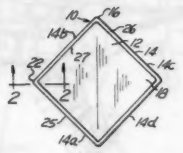
4,318,318

CUTTING TOOL

Lawrence A. Schott, 15940 Warwick, Detroit, Mich. 48223

Continuation of Ser. No. 963,975, Nov. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 825,967, Aug. 19, 1977, Pat. No. 4,159,884, which is a continuation-in-part of Ser. No. 812,450, Jul. 15, 1977, Pat. No. 4,159,885. This application Jul. 29, 1980, Ser. No. 173,272
Int. Cl.³ B23B *3/00*; B26D *1/00*
U.S. Cl. 82—1 C **12 Claims**

1. A method for promoting the formation of a false cutting tip build-up on a cutting tool during use of said cutting tool for cutting a workpiece, said method comprising forming said cutting tool with a top surface and a peripheral surface providing a cutting edge at the junction between said top surface and said peripheral surface, said junction defining at least one cutting tip, disposing a perimetric shallow relatively narrow groove in said top surface such that said perimetric shallow



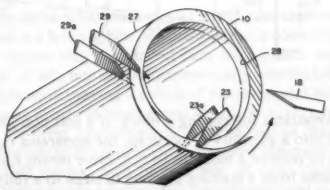
groove has an edge disposed at said cutting edge at least at said cutting tip, and effecting a cut in said workpiece to a depth such that the distance bridged by a chip removed from said workpiece by said cutting edge is longer than the width of said groove and said chip engages said top surface without engaging said groove, whereby a false cutting tip build-up is formed in said groove.

4,318,319

SEALING RING AND METHOD AND APPARATUS FOR MAKING SAME

Harold W. Scholin, 1125 N. Northwest Hwy., Park Ridge, Ill. 60068

Division of Ser. No. 29,779, Apr. 13, 1979, which is a continuation of Ser. No. 838,828, Oct. 3, 1977, abandoned. This application Apr. 28, 1980, Ser. No. 144,285
Int. Cl.³ B23B *1/00, 3/04, 3/00*
U.S. Cl. 82—47 **8 Claims**



1. The method of making a sealing ring of an elastomeric material, wherein the cross section thereof has at least eight substantially flat surfaces, comprising the steps of

(a) providing a sleeve formed of an elastomeric material, the surfaces of the inner and outer diameters thereof being molded surfaces,

(b) forming inclined surfaces

(1) intersecting the surfaces of the inner and outer diameters of said sleeve at one end thereof, and

(2) intersecting the surfaces of the inner and outer diameters of said sleeve a predetermined distance inwardly from said one end thereof, and

(c) thereafter severing a ring from said sleeve along a radial plane intersecting said last named inclined surfaces.

4,318,320

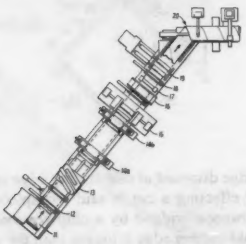
METHOD FOR REMOVING CAMBER FROM STRIP

Paul K. Davis, Alameda, Calif., assignor to Pacific Roller Die Co., Inc., Hayward, Calif.

Division of Ser. No. 961,758, Nov. 17, 1978, Pat. No. 4,255,999. This application Nov. 10, 1980, Ser. No. 205,235

Int. Cl.³ B26D 7/26

U.S. Cl. 83—56 3 Claims



1. A method for removing camber from strip preparatory to forming helical pipe, comprising:

feeding the strip longitudinally along a directional line of feed contacting the surface of the strip between its lateral edges to sense lateral deviations of the strip relative to the directional line of feed, laterally moving and realigning the strip in response to lateral deviations, and severing the side edges of the strip on lines parallel with the directional line of feed.

4,318,321

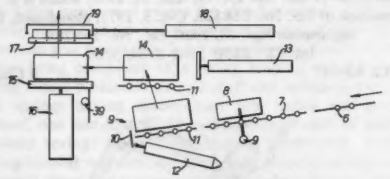
CHEESE CUTTER WHEREIN LAST SLICE IS NOT SMALLER THAN DESIRED MINIMUM

David N. De Mattos, Wimbourne, England, assignor to Codat Management Limited, Wimbourne, England

Filed Nov. 6, 1979, Ser. No. 91,395

Int. Cl.³ B26D 7/28

U.S. Cl. 83—71 6 Claims



1. Apparatus for cutting a block of a soft non-granular substance into a plurality of portions, the apparatus comprising a platen to receive a block to be cut; drive means for advancing the platen from a starting position in steps to a fully advanced position; first cutter means for cutting into the block along the direction of advance of the block on the platen; second cutter means for cutting the block in a direction transverse to the cuts produced by the first cutter means whereby operation of the first and second cutter means produces a layer of portions cut from the block, and control means for controlling the size of the steps in which the platen is advanced by the drive means, and thus the thickness of the layer of portions produced, such that the block is completely divided over its entire length, first, into a plurality of layers of specified thickness, each of said layers being of equal thickness and second, into at least one remainder layer having a thickness which is less than the sum of the specified thickness and a minimum thickness but not less than said minimum thickness, said minimum thickness being chosen without reference to said specified thickness, the latter being greater than said minimum thickness, said control means determining whether said remainder layer can be cut into two layers of equal thickness both greater than the minimum thickness, and in the event that the remainder can be so cut, said control means advances the platen for the remainder to be cut accordingly, but if the remainder cannot be cut into two equal layers both greater than said minimum thickness then said control means advances said platen to its fully advanced position without said remainder being so cut.

4,318,322

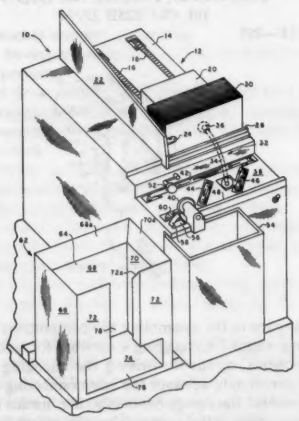
ENVELOPE CUTTER APPARATUS

Robert J. Russell, Medford, N.J., assignor to Mail-Ex Corporation, Skokie, Ill.

Continuation-in-part of Ser. No. 962,399, Nov. 20, 1978, abandoned, which is a division of Ser. No. 801,454, May 31, 1977, Pat. No. 4,159,611, which is a continuation-in-part of Ser. No. 707,723, Jul. 22, 1976, abandoned. This application Sep. 26, 1979, Ser. No. 78,921

Int. Cl.³ B26D 1/24, 7/06; B65B 43/18

U.S. Cl. 83—94 17 Claims

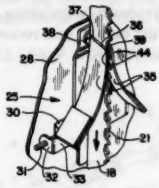


1. An envelope processing machine comprising: a supply hopper for envelopes; cutting means for severing one edge of an envelope; a receiving station for the severed envelopes; means for removing envelopes in one by one relationship from the supply hopper; conveying means for receiving the envelopes removed from the supply hopper and transmitting the removed envelopes in predetermined feeding direction through the cutting means to the receiving station; an abutment member spaced laterally from the conveying means and against which an envelope is to be engaged in its movement to the cutting means; and means for orienting the envelopes in respect to the cutting means, said orienting means including a plurality of feed belts located in the space between the conveying means and the abutment member and angularly disposed relative to the feeding direction of the conveying means and inclined in the direction of the cutting means and operable upon the envelopes for permissive shifting of the same laterally in the plane of the conveying means into engagement with the abutment member for the cutting operation.

4,318,323
SLAVE BLADE SCRAPERS FOR A BAND SAW

John E. Voorhees, Sidney, and Raymond J. Mathieu, Ludlow Falls, both of Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed May 19, 1980, Ser. No. 150,854
Int. Cl.[3] B23D 59/00; B23Q 11/00
U.S. Cl. 83—168 6 Claims



1. For use in a band saw having a band saw blade with a forward cutting edge for cutting products such as meat or the like and means for moving said blade in a cutting operation, a blade scraper assembly for removing debris from said band saw blade, said scraper assembly comprising:

a. a pair of scraper blades,

b. a scraper blade holder mounting said scraper blades one on each side of said band saw blade such that a leading edge of each scraper blade contacts said band saw blade facing into the direction of movement of said band saw blade, said holder being movably mounted to said band saw such that said leading scraper blade edges will have imparted thereto, by said contact with and movement of said band saw blade therebetween, forces tending to move said scraper blades and holder in the direction of movement of said band saw blade, and

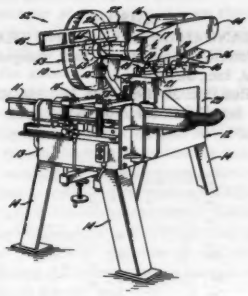
c. stop means on said holder at a rear edge of said band saw blade and being movable with said holder for contacting said rear edge of said band saw blade and thereby limiting forward movement of said scraper blades, whereby said stop means cooperates with said scraper blade holder so as to substantially maintain said leading edges of said scraper blades in a predetermined positional relationship with respect to said forward cutting edge of said band saw blade.

4,318,324
CUTTING MACHINE WITH GUARD FOR CUTTING BLADE

Stephen R. Hall, and Craig L. Lindmark, both of Rockford, Ill., assignors to Rock Mill, Inc., Rockford, Ill.

Filed Sep. 22, 1980, Ser. No. 189,738
Int. Cl.[3] B26D 7/22
U.S. Cl. 83—397 8 Claims

1. A cutting machine for cutting a workpiece in a preselected plane, said machine comprising a shaft perpendicular to said plane, a circular cutting tool disposed in said plane and secured to said shaft, a base, means supporting said shaft for rotation about its axis and for transverse movement on said base from an inactive position toward the workpiece, said tool rotating with and moving bodily with said shaft thereby to cut the workpiece as the shaft is moved away from said inactive position, power operated mechanism for rotating said shaft, a guard including a cylindrical cover journaled on said shaft to turn relative to the shaft and to move bodily with the shaft and said tool, said cover being larger in diameter than said tool and enclosing the tool, a notch formed in the periphery of said cover to expose a portion of said tool and facing away from the workpiece and from the operator of the machine when said shaft is in said inactive position, and linkage means connecting said base and said cover and being operable as said shaft moves toward said workpiece to turn said cover relative to said shaft

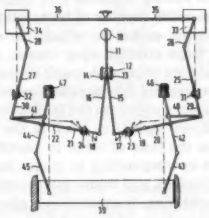


and in a direction to cause said notch to face the workpiece thereby to expose said tool to the workpiece.

4,318,325
PRESS DRIVE ARRANGEMENT

Alfred Bareis, Uhingen; Ewald Bergmann, Rechberg-hausen, and Hans-Martin Dommer, Goppingen, all of Fed. Rep. of Germany, assignors to L. Schuler Pressen GmbH, Goppingen, Fed. Rep. of Germany

Filed Aug. 22, 1980, Ser. No. 180,475
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934286
Int. Cl.[3] B26D 5/14, 5/18
U.S. Cl. 83—530 19 Claims



1. A press drive which includes a central cam shaft means, a slide guided in a linear guide of a press frame, a connecting rod means for connecting the central cam shaft means with said slide, a pair of side bar means symmetrically articulated to the slide for indirectly moving a punch of the press, and balancing weight means driven in an opposed direction to reciprocating masses of the press, characterized in that a pair of first toggle joint linkage means are respectively disposed symmetrically to the cam shaft means, each of said pair of first toggle joint linkage means extends substantially horizontally and is respectively articulated to one of the side bar means supported by a bearing means disposed at the frame of the press, a pair of second toggle linkage means are respectively disposed symmetrically to the cam shaft means, each of said pair of second toggle joint linkage means extends substantially vertically and is articulated to the respective second toggle joint linkage means and the balancing weight means, means are provided for enabling each of the second toggle joint linkage means to be guided by the frame of the press, a pair of third toggle joint linkage means are respectively disposed symmetrically with respect to the cam shaft means, each of said pair of third toggle joint linkage means extends substantially vertically and is articulated to the punch and is braced in a direction of motion of the punch on the frame of the press, and in that a transmission bar

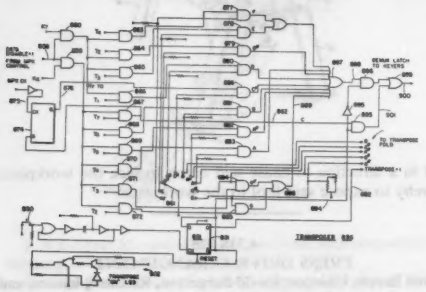
means is provided for articulatingly connecting each of the third toggle joint linkage means with the respective first and second toggle joint linkage means.

4,318,326

PLURAL MANUAL ORGAN HAVING TRANSPOSER

Stephen L. Howell, Huntingburg, Ind., assignor to Kimball International, Inc., Jasper, Ind.

Filed Dec. 29, 1980, Ser. No. 220,309
Int. Cl.³ G10H *1/00*; G10C *3/12*
U.S. Cl. 84—1.01 **15 Claims**



1. In an electronic organ comprising a plurality of manuals each having a plurality of playing keys, multiplexer means for scanning said manuals simultaneously to produce a plurality of synchronized respective serial data streams each comprising a plurality of time slots corresponding on a one-to-one basis to the keys of the respective manual and having keydown signals in the time slots of depressed keys of the respective manual, demultiplex means having a plurality of stages corresponding respectively to the tones capable of being played by the organ and having data input means to which the data streams are connected and a latch control input means, said demultiplex means shifting said data streams through its stages and converting the serial data streams into parallel format under the control of the latch control signal on the latch control input means to cause the keydown signals to latch in the stages in which they are present at the time of serial to parallel conversion to thereby key tones corresponding to stages in which the keydown signals are latched, and means associated with said multiplex means for generating in succession a plurality of multiple bit digital timing signals synchronized with and corresponding respectively to the time slots of the synchronized data streams, the improvement being a transposer comprising: decoder means for decoding any one of a plurality of the digital timing signals occurring near the end of the scan of the manuals and producing the latch control signal on said demultiplex means control input in synchronism with the occurrence of said any one timing signal to cause said demultiplex means to convert the data streams into parallel format at that time, and player operated selector means for selecting any one timing signal from among the plurality of such signals occurring near the end of the scan of the manuals to change selectively the time of serial to parallel conversion to thereby transpose the keydown pulses to different stages of the demultiplex means at the time of serial to parallel conversion.

4,318,327

DIGITAL CHORD DISPLAY FOR STRINGED MUSICAL INSTRUMENTS

Daniel J. Toups, 201 Estate Dr., Houma, La. 70360

Filed Jul. 10, 1980, Ser. No. 167,241
Int. Cl.³ G09B *15/02*
U.S. Cl. 84—477 R **9 Claims**

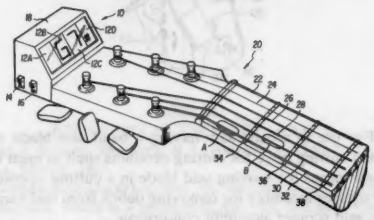
1. A display device for use with a stringed instrument having depressible strings and interfret positions comprising:

(a) a switching matrix adapted for connection to said instrument for providing status signals indicative of the state of each string for every interfret position;

(b) a plurality of display elements for displaying musical chord indicia corresponding to the status signals produced in said switching matrix;

(c) a digital logic circuit connected to said switching matrix and to said display elements comprising:

(i) fret scanning means for successively accessing each interfret position of said instrument, and string scanning means for individually monitoring all strings of said instrument during each of said successive interfret position accessions;



(ii) electronic storage means addressable by predetermined combinations of said status signals and containing information signals corresponding to musical chord indicia representative of said predetermined combinations;

(iii) a digit, row and column select circuit for cyclically accessing each of said display elements; and

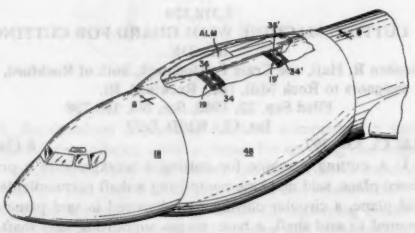
(iv) output sequencing means for directing said information signals to said display elements in synchronism with said digit, row and column select circuit.

4,318,328

REMOVABLE EXTERNAL PAYLOAD CARRIER FOR AIRCRAFT

Thomas P. Rona, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 9, 1979, Ser. No. 82,498
Int. Cl.³ F41F *3/06*
U.S. Cl. 89—1.815 **18 Claims**



17. A method for converting an aircraft to an ALM carrier aircraft, comprising the steps of: securing guide track means to the aircraft fuselage about the periphery thereof essentially by applying a peripheral compressive force thereto; and mounting payload positioning means to said guide means for supporting a plurality of ALM's in parallel alignment with the longitudinal axis of the fuselage for movement with respect to the fuselage periphery toward an ejection station at which an ALM may be released, whereby the aircraft may be converted to an ALM carrier and may be refurbished to its prior condi-

tion with essentially no modification to the fuselage or the structure.

4,318,329

ANTI-TANK WEAPON

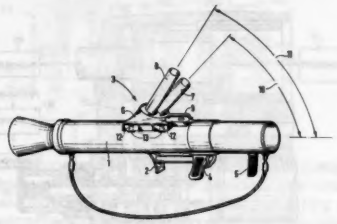
Max Rentzsch, Röthenbach, and Erich Bock, Nuremberg, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Jul. 19, 1979, Ser. No. 59,237

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1978, 2833390

Int. Cl.³ F41F *3/04*; F41C *27/06*

U.S. Cl. 89—1.816 **4 Claims**



1. Portable anti-tank weapon comprising a projectile launch tube; firing means including at least one firing tube for an illuminating projectile being mounted on said launch tube, said firing tube being at an angle of elevation relative to said launch tube, and said firing means including at least two of said firing tubes having equal calibers and being arranged at different angles of elevation relative to said launch tube.

4,318,330

METHOD AND APPARATUS FOR THE PRECISE ALIGNMENT OF A WEAPON

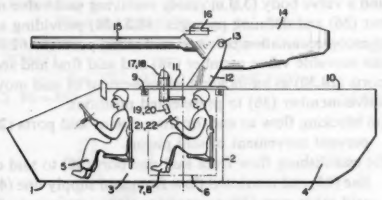
Helmut Hausenblas, Kassel-Kirchditmold, Fed. Essen Rep. of Germany, assignor to Rheinstahl Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 21, 1975, Ser. No. 600,908

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1974, 2434640

Int. Cl.³ F41G *5/24*

U.S. Cl. 89—41 TV **6 Claims**



1. A method for precisely aligning a top-mounted individually stabilized weapon on an armored vehicle by means of a firing control system including an optical observation and aiming system controlled by the vehicle gunner after a target has been optically sighted by the vehicle commander by means of a stabilized panoramic optical device, the vehicle being additionally provided with an individually stabilized panoramic optical device for the vehicle gunner, a target television camera fixedly mounted on the weapon for movement therewith; and a television monitor for the gunner; said method comprising the steps of: in response to a control signal initiated by the vehicle commander, aligning the panoramic optical device of the gunner with the panoramic optical device of the vehicle commander by causing the actual values of the position of the commander's optical device as to the elevation and azimuth to be transmitted to the stabilization control of the gunner's optical device as rated values; thereafter, in response to control signals generated by the gunner,

aiming the weapon at the target as seen through the panoramic optical device of the gunner by causing the weapon to follow the movement of the panoramic optical device of the gunner,

switching the image of the target as detected by the target television camera to the television monitor,

finely adjusting the aim of the weapon at the target utilizing the image on the monitor by switching stabilization control of the weapon to a primary stabilization condition and the stabilization control of the panoramic optical device of the gunner to a condition wherein it follows the movement of the weapon, and primarily moving the weapon to the desired position in response to said control signals, thereby causing the corresponding movement of the panoramic optical device, and

then firing the weapon.

4,318,331

AUTOMATIC AMMUNITION LOADING APPARATUS FOR AN ARMORED VEHICLE

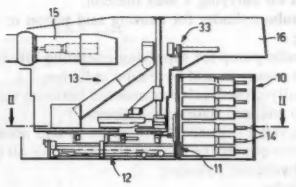
Helmut Echtler, Biessenhofen, and Peter Wimmer, Marktoberdorf, both of Fed. Rep. of Germany, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed Jun. 30, 1980, Ser. No. 164,189

Claims priority, application Switzerland, Jul. 6, 1979, 6948/79

Int. Cl.³ F41H *7/06*

U.S. Cl. 89—46 **15 Claims**



1. An automatic ammunition loading apparatus for an armored vehicle containing a rotatable vehicle turret and a firing weapon, in order to infeed projectiles to the firing weapon, comprising:

an ammunition magazine;

said ammunition magazine containing:

at least one ammunition container;

a respective drive each having drive shafts; and

a respective endless band chain means cooperating with said drive shafts;

a magazine sluice arranged between the ammunition magazine and the vehicle turret;

said magazine sluice containing:

a trap door; and

an actuation cylinder for opening and closing said trap door;

a transfer station;

said transfer station containing:

a withdrawal device for withdrawing projectiles out of the ammunition magazine through said magazine sluice;

a pivot device; and

a rotatable table to which there are infed projectiles by means of said pivot device; and

an ammunition infeed device;

said ammunition infeed device containing:

a lifting device for lifting the projectiles from the rotat-

able table below the vehicle turret up to the region of the firing weapon;

a loading cradle for receiving the projectile to be raised;

said loading cradle being secured at said lifting device; and

a ramming device for ramming the raised projectile into the firing weapon.

4,318,332

HYDRAULIC APPARATUS

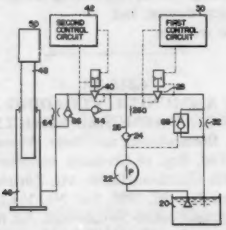
Shitta Shingu, Tokyo; Atsushi Takahashi, and Isao Kosugi, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 6, 1979, Ser. No. 45,869

Claims priority, application Japan, Jun. 13, 1978, 53-70357

Int. Cl.[3] **F15B** *11/08, 13/042*

U.S. Cl. 91—29 **1 Claim**



1. A hydraulic apparatus comprising:

a piston for carrying a load thereon;

a hydraulic cylinder for causing said piston to move vertically;

a hydraulic pump for supplying operating oil via a one way valve means to said hydraulic cylinder;

a normally closed valve connected between said hydraulic pump and said hydraulic cylinder;

a check valve connected in parallel to said normally closed valve to permit the flow of the operating oil only toward said hydraulic cylinder;

an oil tank;

a normally open valve connected to a pipe passage for transmitting to said oil tank the operating oil delivered from said hydraulic pump;

a control circuit for piston-raising operation for controlling said normally open valve so as to lessen the oil passage thereof in the case of raising the piston and so as to totally open said normally open valve in the case of lowering the piston;

a control circuit for piston-lowering operation, for controlling said normally closed valve so as to totally close said normally closed valve in the case of raising the piston and so as to enlarge the oil passage thereof in the case of lowering the piston;

a first orifice member provided on the downstream side of said normally open valve in a manner that it is connected thereto in series;

a second orifice member connected between said normally closed valve and said cylinder and a check valve connected in parallel with said second orifice for permitting only the passing therethrough of the operating oil toward said hydraulic cylinder; and

a second check valve for permitting the operating oil to flow into said oil tank when said hydraulic pump stops, said check valve being connected in parallel to the orifice member disposed in the downstream of said normally open valve, and pressure line means connected downstream of said pump and upstream of said one way valve means and acting to keep said second check valve closed under pump pressure.

4,318,333

BIDIRECTIONAL, MULTIPLE SPEED HYDRAULIC ACTUATOR

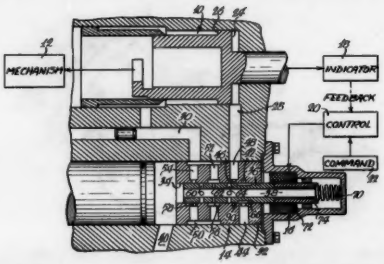
Richard A. Cemenska, Edelstein, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00798, § 371 Date Sep. 28, 1979, § 102(e) Date Sep. 28, 1979, PCT Pub. No. WO81/00893, PCT Pub. Date Apr. 2, 1981

PCT Filed Sep. 28, 1979, Ser. No. 99,138

Int. Cl.[3] **F15B** *13/04, 15/17*

U.S. Cl. 91—31 **10 Claims**



1. A bidirectional, multiple speed hydraulic actuator comprising:

a piston (**10**) adapted to be connected to an apparatus to be driven bidirectionally at at least two differing speeds in each direction, said piston having opposed pressure responsive surfaces (**24,26**), one (**24**) being larger than the other (**26**);

first and second parts (**28,30**) respectively in fluid communication with said one and said other surfaces;

a pressure fluid supply line (**40**);

a pressure fluid drain line (**44**);

a control valve (**14,32,36**) between said ports (**28,30**) and said lines (**40,44**) and having a movable valve member (**36**) defining an internal flow chamber (**38**) and radial ports (**60,62,64**) opening outwardly from said flow chamber, and a valve body (**32**) movably receiving said valve member (**36**) and defining passages (**48,52,54**) providing selective communication between said radial ports (**60,62,64**) of the movable valve member (**36**) and said first and second ports (**28,30**) as an incident of movement of said movable valve member (**36**) to preselected positions;

(a) blocking flow to and/or from one of said ports (**28**) to prevent movement of said piston,

(b) establishing flow from said one port (**28**) to said drain line (**44**) and restricted flow from said supply line (**40**) to said other port (**30**) to produce slow movement of said piston in one direction,

(c) establishing flow from said one port (**28**) to said drain line (**44**) and unrestricted flow from said supply line (**40**) to said other port (**30**) to produce rapid movement of said piston in said one direction,

(d) establishing unrestricted flow to said one port (**28**) from said supply line and restricted flow from said other port (**30**) to said supply line (**40**) to produce slow movement of said piston in the other direction, and

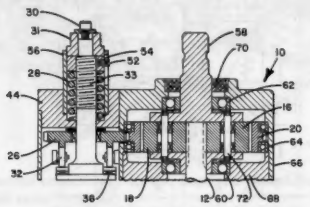
(e) establishing fluid communication between both said ports (**28,30**) and said supply line (**40**) to produce rapid movement of said piston in said other directions; and

a single device (**16**) for moving said valve selectively fully to said preselected positions.

4,318,334
TORQUE CONTROL FOR A FLUID OPERATED MOTOR

Dana W. Nelson, Bellville, and Charles H. Kouse, Springfield, both of Ohio, assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 20, 1980, Ser. No. 132,067
Int. Cl.[3] B25B 23/14
U.S. Cl. 91—59 12 Claims



1. A torque control for a fluid operated motor comprising:

gear means including at least one planetary gear connected to said motor for rotation therewith, and a ring gear in engagement with said planetary gear and maintained in a generally stationary position during normal operation of said motor, with said planetary gear orbiting about said ring gear when the ring gear is stationary and said motor is operating;

torque transmitting means connecting said orbiting planetary gear and work load, with the torque transmitted from said motor through said planetary gear to said work load increasing as the work load increases;

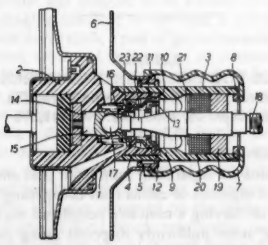
cam means in driving engagement with said ring gear, with said ring gear rotating to rotate said cam means when the torque transmitted from the motor to said work load increases above a predetermined magnitude; and

valve means connected to said cam means for controlling the flow of fluid to said motor and movable from an open to a closed position to terminate flow of motivating fluid to said motor upon rotation of said cam means.

4,318,335
PRESSURE CONTROL VALVE

Hans-Jürgen Wiegand, Frankfurt-Sossenheim, and Wolfgang Geiss, Steinbach, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jul. 26, 1979, Ser. No. 60,934
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1978, 2836681
Int. Cl.[3] F15B 9/00; F16K 1/00
U.S. Cl. 91—369 A 23 Claims



1. A pressure control valve for a mechanically controlled power brake unit comprising:

a control valve casing having a longitudinal axis disposed within and in an axially slidable, sealed relationship with a vacuum casing of said brake unit, said control valve casing including a front member coaxial of said axis disposed within said vacuum casing and an approximately cylindrical guide member connected to said front member in said vacuum casing and extending out of said vacuum casing coaxial of axis;

a valve closure member secured between adjacent cooperating surfaces of said front member and said guide member coaxial of said axis within said control valve casing;

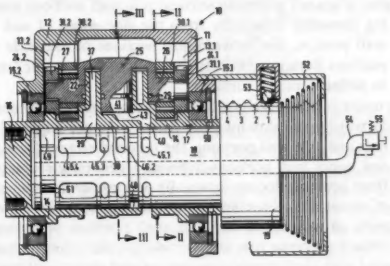
a valve piston guided coaxial of said axis in a first axial bore disposed in said front member, said valve piston extending out of said first bore to a point adjacent said closure member, said valve piston having a second axial bore disposed therein having one end thereof open toward said closure member; and

a piston rod coaxial of said axis having one end secured in said second bore and the other end extending through and projecting from said guide member, said piston rod being pivotable about said one end, said piston rod having a shank portion adjacent said one end disposed at least partially in said second bore and in a cooperative relationship with said open end of said second bore, the radial distance between said open end of said second bore and said shank portion being such that at least said valve piston adjacent said open end of said second bore serves as a stop to limit radial excursions of said piston rod.

4,318,336
HYDRAULIC MOTOR

Rudolf Bock, Palmerstrasse 9, 7031 Holzgerlingen, Fed. Rep. of Germany

Filed Apr. 24, 1980, Ser. No. 143,307
Int. Cl.[3] F01B 1/06, 13/06; F04B 1/10
U.S. Cl. 91—474 15 Claims



1. A hydraulic motor, comprising a stationary housing having two cam tracks spaced from one another; a hollow rotor in said housing and rotatable about an axis, said rotor having a plurality of hollow radially extending pistons spaced from one another in a circumferential direction and each having two concentric annular walls forming a first chamber bounded between said annular walls and a second chamber bounded inside an inner wall of said walls, each of said pistons having two separate fluid-conveying passages spaced from one another in an axial direction and each communicating with a respective one of said chambers; a plurality of cylinders in said housing spaced from one another in the circumferential direction and arranged to displace said hollow pistons, each of said cylinders having two journals extending oppositely in the axial direction and arranged to cooperate with said cam tracks of said housing, and a radial projection received in said second chamber of a respective one of said pistons; and

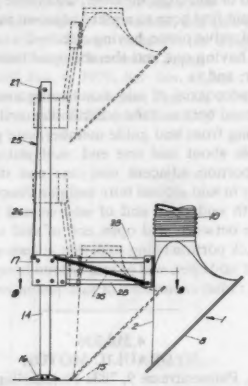
a central control member located in said rotor concentric to the latter and displaceable in the axial direction between a plurality of operating positions, said control number having a plurality of further fluid-conveying passages spaced from one another in the axial direction and cooperating with said first-mentioned fluid-conveying passages of said pistons.

4,318,337

SOURCE CAPTURE FUME REDUCTION APPARATUS

Frederick R. Wichmann, Cincinnati, and James C. Bricker, Waynesville, both of Ohio, assignors to United Air Specialists, Inc., Cincinnati, Ohio

Filed Jul. 7, 1980, Ser. No. 166,303
Int. Cl.[3] B08B *15/04*
U.S. Cl. 98—115 VM 10 Claims



1. A fume capture hood for providing source capture of fumes produced at a work station comprising:

a generally vertically oriented rear wall portion;

a part of spaced generally vertical side wall portions extending smoothly forwardly from the side edges of said rear wall portion, the forwardmost sections of said side wall portions flaring outwardly throughout their major lengths to define concave surfaces;

an upper concave wall surface extending smoothly generally forwardly and downwardly from the upper edges of said rear and side wall portions, the forward edges of said side and upper wall portions defining a generally rectangular front opening sloping forwardly and upwardly at an angle of about 45°, the contours associated with the forward parts of said upper and side wall portions operating to reduce entrance loss and turbulence, the contour associated with the forwardmost part of said upper wall portion producing a higher inlet velocity near the top of the hood for increasing suction of fumes near an operator's breathing zone; and

means associated with the upper end of said hood for attaching flexible conduit means to exhaust fumes captured by the hood, said attachment means including an opening extending into the hood and being defined by the confluence of the upper edges of said rear, side and upper wall portions, said fume capture hood including means for mounting said hood for vertical movement proximate the work station such that the orientation of said forward opening remains constant during vertical movement of the hood, said mounting means comprising:

a vertical stanchion mountable proximate the work station; and

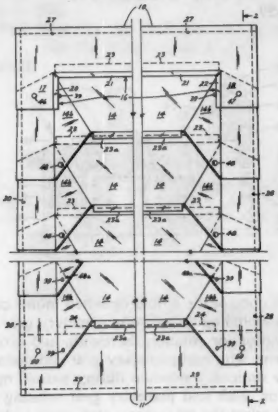
a carriage slidably movable along said stanchion means mounting said hood to said carriage and means associated with said carriage for automatically holding said hood at a preselected vertical position, said holding means comprising a constant force spring secured between said stanchion and said carriage, said spring acting to compensate for the weight of said hood and attachments thereto to maintain the hood at a desired vertical position.

4,318,338

LOUVER STRUCTURE

John V. Felter, P.O. Drawer 38271, Houston, Tex. 77088

Filed Feb. 21, 1980, Ser. No. 123,192
Int. Cl.[3] F24F *13/08*
U.S. Cl. 98—121 R 1 Claim



1. Louver apparatus, comprising a first end member, a second end member disposed parallely spaced from said first end member, and at least one vane member disposed parallely between said first and second end members to provide air passage means past said apparatus, said first end member and said vane members and said second end member being serially connected one to another to form a composite structure in which each said vane member bridges between adjacent others of said members, said first and second end members being of elongate substantially flat form and each said vane member having substantially flat portions at its opposite ends and having an angularly upset portion between said opposite end portions, said members being disposed parallely one above another in horizontal dispositions with said end members and said end portions being disposed along a vertical plane, said members being successively overlapped with each member overlapping adjacent members at the same sides thereof, whereby said apparatus is adapted to shed precipitation at its opposite sides in relatively inverted positions, each said vane member having an angular inwardly converging portion between each said end portion and said angularly upset portion, said vane members being riveted together at said angular inwardly converging portions.

4,318,339

APPARATUS FOR COLD PEELING CITRUS FRUIT

Paul F. Sage, Rte. 1, Box 191-F, Babson Park, Fla. 33827

Filed Apr. 18, 1980, Ser. No. 141,376
Int. Cl.[3] A23N *7/00*
U.S. Cl. 99—589 8 Claims

1. An apparatus for separating pulp from peel and albedo in a wedge-shaped segment of citrus fruit comprising:

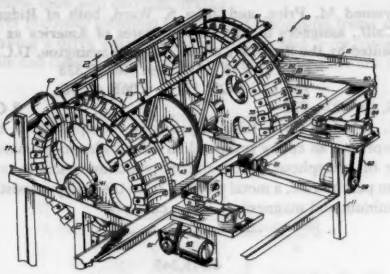
a rotary carrier having a concave peripheral surface;

a plurality of stops uniformly disposed along the concave peripheral surface;

means for transporting the wedge-shaped segments to the rotary carrier;

means for pushing the wedge-shaped segments against the concave peripheral surface whereby the peel will conform to the shape of the concave peripheral surface; and

a severing knife disposed adjacent to the rotary carrier, and having a pointed end and a concave knife surface in substantial conformity to the concave peripheral surface on said rotary carrier.

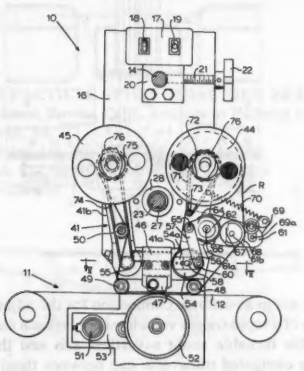


4,318,340

VARIABLE TAPE ADVANCE IMPRINT MARKER

James L. Shenoha, Lockport, and Robert A. Burch, Chicago, both of Ill., assignors to Norwood Marking & Equipment Co., Inc., Downers Grove, Ill.

Filed Dec. 17, 1979, Ser. No. 104,380
Int. Cl.³ B41F *1/04*
U.S. Cl. 101—27 **9 Claims**



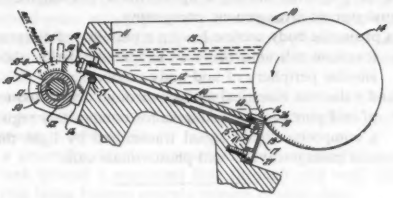
1. An imprinter comprising a support rack, a main frame suspended from said rack movable across the rack, a drive shaft rotatably journaled in said rack extended freely through said main frame and adapted to be rotated in either direction from a packaging machine or the like, a drive gear slidably keyed on said drive shaft, a pair of gears journaled on said main frame meshed with said drive gear, an upstanding U-shaped frame straddling said drive shaft adjacent to said main frame, bell cranks driven by said pair of gears driving said U-shaped frame in an orbital path with a lowered stroke and a raised stroke having a direction controlled by the direction of rotation of the drive shaft, a ribbon unwinding reel rotatably mounted on one side leg of the U-shaped frame, a ribbon winding reel rotatably mounted on the other leg of said U-shaped frame, a heater mounted on the bight portion of said U-shaped frame, a type block removably mounted on said heater, guide rolls on the U-shaped frame directing ribbon from the unwinding reel over the type block to the winding reel, a feed mechanism driven in one direction by one of said bell cranks for pulling ribbon from said unwinding reel as the U-shaped frame moves through its raised stroke in its orbital path, adjustable means for maintaining said one direction of drive input to the feed mechanism in either direction of rotation of the drive shaft varying the drive input to said feed mechanism for regulating the increment length of ribbon pulled from the unwinding reel during said raised stroke of the U-shaped frame, and means driven by another of said bell cranks driving said winding reel to maintain the ribbon in a taut condition, said adjustable means including a driven rotating member having a slot therein extending to both sides of a center point of rotation of the member, a slidable block in said slot, fastening means for fastening the slidable block in a selected one of a number of positions in the slot on both sides of the center point, and a link connection between said slidable block and said feed mechanism having a single direction drive stroke controlled by the position of said slidable block in said slot.

4,318,341

INK FOUNTAIN FOR PRINTING PRESS

Erich Pietsch, Offenbach-Bieber, and Claus Simeth, Offenbach am Main, both of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 11, 1980, Ser. No. 186,333
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1979, 2937037
Int. Cl.³ B41F *31/04, 31/06, 33/00;* B41L *27/06*
U.S. Cl. 101—365 **4 Claims**



1. In an ink fountain for a printing press, the combination comprising a frame, a driven fountain roller journaled in the frame, the frame defining an ink trough having a sloping bottom wall, the front edge of the frame extending adjacent and parallel to the fountain roller to define a control space, a flow control strip in the control space, the flow control strip being made up of a series of separate and independent flow control segments in the form of identical blocks of rectangular shape formed of durable resilient material arranged snugly side-by-side along the length of the fountain roller to control the thickness of the ink film fed to the roller, each control segment being rigidly secured adjacent its lower end to the frame in a position at right angles to the bottom wall of the trough, each control segment having a relatively thin central section to facilitate bending and sprung forwardly to bias the presented upper edge of the segment against the fountain roller, a set of pull rods connected at right angles to the segments and at points spaced a short distance downwardly from the upper ends of each of them, the pull rods extending parallel to one another to the rear of the frame, positionable adjusting means at the rear end of each of the pull rods for adjustably drawing the connected segment rearwardly to define a gap between the segment and the fountain roller to establish the thickness of the ink film fed to the fountain roller in the respective zonal position, and a resilient sealing strip arranged immediately above the rods and sandwiched between the front edge of the frame and the series of flow control segments, the sealing strip being substantially flush with the bottom wall of the trough and the top surface of the flow control segments and having excess width in the free state so as to be under edgewise compression between the front edge of the frame and the flow control segments thereby to follow the movements of the individual flow control segments over the entire range of adjustment

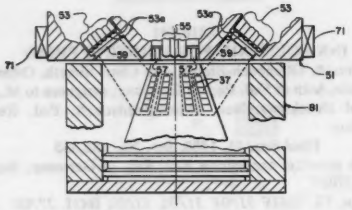
while maintaining a constant seal between the control segments and the front edge of the frame.

4,318,342

AMMUNITION WITH SURFACE-MOUNTED LIGHT-SETTABLE PICKUP ARRANGEMENT FOR DIGITAL MEMORY STORAGE

Charles E. Chandler, Baltimore, Md., assignor to AAI Corporation, Cockeysville, Md.

Filed Jan. 25, 1980, Ser. No. 115,587
Int. Cl.³ F42C *17/00*
U.S. Cl. 102—207 **22 Claims**



1. A projectile having a light-settable photodetector and signal storage arrangement, comprising,

a projectile body section having a plurality of discrete photovoltaic cell units disposed in spaced relation about the annular periphery of said body section,

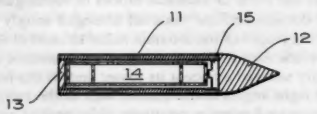
and a discrete electrical storage medium connected to each of said photovoltaic cell units for compositely registering a composite digital signal transmitted by light through said passageways to said photovoltaic cells.

4,318,343

DUAL MODE INCENDIARY BOMBLET

James B. King, Ashland, Oreg., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 19, 1971, Ser. No. 173,281
Int. Cl.³ F42B *25/14*
U.S. Cl. 102—365 **3 Claims**



1. A dual mode incendiary bomblet comprising:

(a) a hollow housing;

(b) a penetration point affixed to one end of the housing and closing that end of the housing;

(c) a removable plug closing the other end of the housing;

(d) a dual mode incendiary package contained within the housing, said dual mode incendiary package comprising a slow burning fuel packet sandwiched between two jetting incendiaries in an inflammable case, said jetting incendiaries being fabricated from a mixture of from about 50 to about 60 weight percent plaster of paris and about 50 to about 40 weight percent powdered aluminum respectively;

(e) ejection means contained within the housing adjacent to and supported by the end wall thereof which is formed by the penetration point; and

(f) means for activating said ejection means.

4,318,344

SPINNING TUBULAR PROJECTILE COMBUSTIBLE SABOT

Raymond M. Price, and John S. Ward, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 3, 1979, Ser. No. 99,355
Int. Cl.³ F42B *13/16*; C06B *45/10*
U.S. Cl. 102—520 **8 Claims**

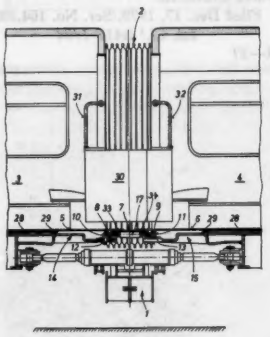
1. A sabot for a tubular projectile comprising: a binder comprising an epoxy resin and an anhydride, an intimate mixture of amorphous boron and molybdenum trioxide, ammonium perchlorate, a metal selected from the group consisting of aluminum and magnesium, and a catalyst.

4,318,345

RAILWAY VESTIBULE CONNECTION

Karl-Heinz Kleim, Nuremberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nuernberg A.G., Nuremberg, Fed. Rep. of Germany

Filed Feb. 26, 1980, Ser. No. 124,784
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1979, 2908354
Int. Cl.³ B60D *5/00*; B61D *1/00, 17/22*; B61G *11/04*
U.S. Cl. 105—15 **3 Claims**



1. For use in a vestibule connection for the adjoining ends of two cars of a rapid transit vehicle, wherein each car end carries a turntable turnable about a vertical axis and the turntables define an elongated transverse gap between them, a combination comprising

an elongated apron extending along and bridging said gap between said turntables;

biasing means connected to and biasing said apron to a centered position in said gap relative to said turntables;

first mounting means including two parallel horizontal shafts extending lengthwise of said gap and mounting said biasing means for vertical pivoting about axes of said shafts; and

second mounting means for mounting said first mounting means on the ends of said cars for horizontal pivoting about respective vertical pivots intersecting said axes of said shafts.

4,318,346

BIASED TRAVELING CRANE DRIVE

Charles E. Sessum, 701 Fleming Ct., Houston, Tex. 77013

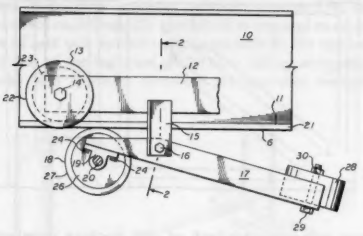
Filed Nov. 16, 1979, Ser. No. 94,825
Int. Cl.³ B61B *3/02*; B61C *15/04*; B61D *15/00*; B61F *13/00*
U.S. Cl. 105—163 R **4 Claims**

1. A bridge crane for mounting onto two substantially parallel I-beams comprising two trolleys each comprising:

a carriage mounted on wheels adapted to ride on a respective I-beam,

a suspension frame extending from each said carriage and below each said carriage having

a lever pivotally mounted to each said suspension frame and having a drive wheel mounted to each said lever toward one end thereof and a counterweight mounted toward the



opposite end thereof, said counterweight tending to urge said drive wheel toward said carriage at a constant force to provide the only force causing each said drive wheel to engage each said I-beam,

a connecting frame connecting said trolleys and

a drive means mounted to said connecting frame and operably connected to each drive wheel.

4,318,347

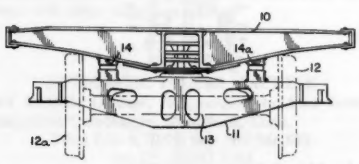
SHIFTABLE PARTICLE SPHEROIDAL SIDE BEARING

Thomas H. Watson, Bonita, Calif., assignor to Pullman Incorporated, Chicago, Ill.

Filed Jan. 30, 1980, Ser. No. 116,684

Int. Cl.³ B60G *21/04;* **B61F** *5/14, 5/24*

U.S. Cl. 105—199 CB **8 Claims**



1. In a railway car having a car body including body bolsters, car trucks including truck bolsters, center plate means connecting said bolsters for relative swivelling movement, the improvement of side bearing assemblies connected to said bolsters on opposite sides of said center plate means, comprising:

a flexible hollow spheriod member having an inner cavity including an access port,

a plurality of granular particles within said cavity,

said hollow member including upper and lower interconnected wall portions respectively connected to said body and truck bolsters wherein lateral forces are constrained during movement of said truck bolsters relative to said body bolsters, and

said granular particles substantially completely filling said hollow member and in contact with one another and providing means by compaction for resisting vertical load forces encountered during relative movements of said body bolster and truck bolster.

4,318,348

RAILROAD TANK CAR

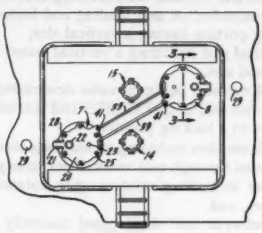
James D. Parsons, Ridgefield, Wash., and Paul S. Wike, Chicago, Ill., assignors to Union Tank Car Company, Chicago, Ill.

Division of Ser. No. 932,817, Aug. 10, 1978, Pat. No. 4,210,254.

This application Jan. 28, 1980, Ser. No. 116,337

Int. Cl.³ B65D *41/16, 51/16*

U.S. Cl. 105—358 **9 Claims**



1. A wheeled vehicle for transporting a plurality of non-compatible liquids, comprising:

A. a container for such liquids comprising a generally cylindrical tank having a generally horizontal longitudinal axis;

B. a flexible diaphragm in said tank, the periphery of said diaphragm contacting the wall of said tank in a generally vertical plane which generally bisects said tank, said diaphragm alternately lying against opposite portions of said tank so as to define different chambers for such non-compatible liquids;

C. means for sealing said diaphragm against said wall; and

D. A separate manway for each of said chambers, each manway comprising:

1. a generally circular open-ended ring attached to said tank around a man-sized hole through said wall, said ring being located entirely outside of said plane;

2. a movable lid closing said open end of said ring, said lid being pivotally attached at one end to said ring; and

3. baffle means attached to and movable with said pivoted lid and extending downwardly therefrom through said ring into said man-sized hole for supporting said diaphragm and thereby preventing said diaphragm from being forced up into said man-sized hole by pressure in said tank.

4,318,349

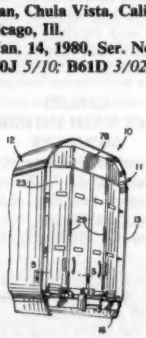
RAILWAY CAR END DOORS

Felixberto A. Galasan, Chula Vista, Calif., assignor to Pullman Incorporated, Chicago, Ill.

Filed Jan. 14, 1980, Ser. No. 111,561

Int. Cl.³ B60J *5/10;* **B61D** *3/02, 17/06, 19/00*

U.S. Cl. 105—378 **9 Claims**



1. In a railway car having a body including side walls and a roof structure,

said body having a loading end and lower and upper cargo

supporting decks adapted to be loaded with cargo through said loading end,

a door arrangement including a door panel assembly hingedly connected to one of said side walls and adapted to be moved between open and closed positions relative to said loading end, the improvement of a locking mechanism for said door panel assembly comprising;

a latch member supported on said door panel assembly for rotation and vertical reciprocating movement,

a keeper member on said loading end including a latch receiving portion having a vertical slot,

said vertical slot including a vertical recess communicating with said slot,

said latch member being movable downwardly into engagement with said keeper member and rotatable in said vertical slot to a locking position,

said latch member including an indexing member adapted to be moved through said vertical slot to engage said keeper member in locking relation upon rotation of said latch member, and

means between said door panel assembly and said latch member operable during rotation of said latch member on said keeper member for raising said door and supporting the same on said keeper member.

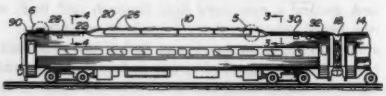
2. The door arrangement in accordance with claim 1, said keeper member being supported on said lower deck.

4,318,350

OVERHEAD WIRING ARRANGEMENT FOR A RAILWAY CAR

Louis M. Skypala, Oreland, Pa., assignor to The Budd Company, Troy, Mich.

Filed Dec. 3, 1979, Ser. No. 99,856
Int. Cl.³ B61D *17/00*
U.S. Cl. 105—397 **10 Claims**



1. An overhead wiring system for a railway car having a roof and interior compartments therebelow comprising:

(a) an elongated raceway positioned on the outer surface of said roof and having a plurality of electrical conductors therein;

(b) means for securing said raceway longitudinally on the outer surface of said roof of said car, and

(c) means for connecting selected ones of said electrical conductors from said raceway into at least one of said compartments below said roof.

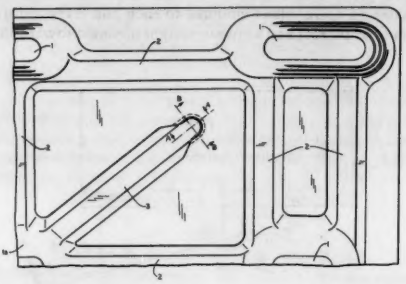
4,318,351

STACKABLE PALLET WITH INTEGRATED STACKING MEMBERS

Edmund Munk, Oberstenfeld, Fed. Rep. of Germany, assignor to Furnier-u. Sperrholzwerk, J. F. Werz, Jr. KG, Werzalit-Pressholzwerk, Stuttgart, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 135,622
Int. Cl.³ B65D *19/24*
U.S. Cl. 108—53.1 **5 Claims**

1. A pallet having an upper side and a lower side and formed as a unitized structure which may be stacked with other such pallets when unloaded in a relatively small space without jamming or damage, the pallet being formed of a mixture of lignocellulose-containing fibers and a thermosetting bonding agent subjected to heat and pressure to form said unitized structure, said structure comprising several feet; crosspieces extending between the neighboring feet; and diagonal crosspieces, said diagonal crosspieces being formed with stacking members integral with said diagonal crosspieces, said stacking members being so formed that the length and width thereof on said lower side are larger than the length and width on said



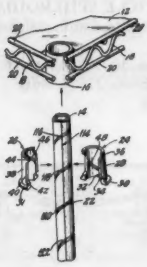
upper side whereby each of said stacking members forms a bearing surface on said lower side which is operative for stacking.

4,318,352

ADJUSTABLE SHELVING HAVING A SPIRAL ENGAGEMENT ARRANGEMENT

Abraham Friedman, Brooklyn, N.Y., and John H. Welsch, Moscow, Pa., assignors to Metropolitan Wire Corporation, Wilkes-Barre, Pa.

Filed May 8, 1980, Ser. No. 147,833
Int. Cl.³ A47B *9/00*
U.S. Cl. 108—111 **16 Claims**



1. Adjustable shelving comprising:

corner posts each having a spiral indentation around an exterior wall thereof;

corner clamping assemblies each for surrounding a respective corner post, each clamping assembly having a frustro-conically shaped exterior wall with a protrusion provided on its interior wall, said protrusion being engageable within said spiral indentation; and

a shelf provided with corner retaining members, each retaining member having a complementary frustro-conical interior wall for receiving and securely holding a respective clamping assembly about its respective post.

4,318,353

TABLE WITH FOLDING LEGS

Robert W. Schier, P.O. Box 407, Union, Ill. 60180

Filed Mar. 10, 1980, Ser. No. 129,130
Int. Cl.³ A47B *3/00*
U.S. Cl. 108—132 **7 Claims**

1. A table with folding legs comprising

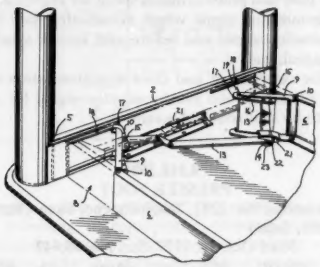
(a) a top,

(b) a pair of leg spans hingedly connected to the underside of

said top, each leg span forming an apron at opposite ends of the table, each leg span being fixedly connected at its end to a leg, the legs and leg span being so constructed and hinged that opposite pairs of legs fold toward one another and when folded lie along the underside of the top,

(c) a pair of opposing side aprons extending downwardly from and fixed to the underside of said top, said aprons extending longitudinally at right angles to but spaced to provide space between their ends and said leg spans of (b),

(d) means comprising spreader members mounted in said spaces of (c) each hingedly connected at one end to an end of one of said side aprons and connectable at the opposite end to one of the leg spans of (b) by a sliding connection whereby said spreader members are movable inwardly



when said pair of leg spans and said legs are folded and are movable outwardly in alignment with their respective aprons so as to form a continuation of said side aprons when said legs are upright and said leg spans are perpendicular to the underside of the table top, and

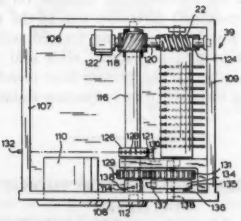
(e) means for locking said spreader members in place when said table is erected, and said locking means comprising hook-shaped members fixed to and extending outwardly from the end of said spreader member of (d) opposite said ends hingedly connected to said aprons, said hook-shaped members engaging ends of slots in said leg spans and partially enclosing the outer ends of said slots when said spreader members of (d) are moved outwardly in alignment with their respective aprons.

4,318,354

AUTOMATIC TELLER MACHINE

Leonard A. Fish, Chicago, Ill., assignor to Avco Investment Management Corporation, Greenwich, Conn.

Filed Feb. 5, 1979, Ser. No. 966,581
Int. Cl.³ E05G 1/04
U.S. Cl. 109—59 **8 Claims**



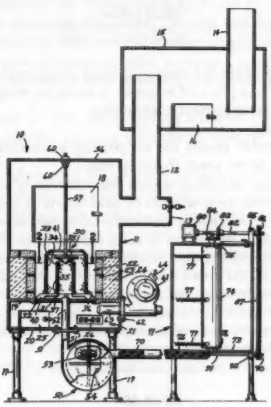
1. In an automatic teller machine incorporating a back plate assembly and a cover assembly and means for movably mounting said cover assembly relative to said back plate assembly, locking means for releasably locking said cover assembly in fixed relation to said back plate assembly comprising a locking bar mounted on said cover assembly, said locking bar being slidably mounted on said back plate assembly between locked and unlocked positions, resilient means for normally urging said locking bar toward its locked position, a plurality of cables operatively connected with spaced-apart locations of said locking bar for moving it toward its unlocked position when said cables are retracted, drum means for simultaneously retracting said plurality of cables, means for rotating said drum, and lock means for rendering said rotating means inaccessible unless said lock means is unlocked.

4,318,355

BURNER STRUCTURE FOR PARTICULATE FUELS

Wilbert K. Nelson, Box 231, Britt, Minn. 55710

Filed Sep. 12, 1979, Ser. No. 74,865
Int. Cl.³ F23D 1/00
U.S. Cl. 110—104 R **8 Claims**



1. An apparatus for the combustion of particulate fuels, comprising:

an outer perforated tubular member and a shorter inner perforated tubular member, said members each having substantially open first and second ends;

means for mounting said members in a laterally spaced apart, coaxial relationship with each other with said second ends extending upwardly and said first ends extending downwardly;

a conical deflector positioned at said second ends of said tubular member, said deflector having its apex directed towards said inner member;

means for adjustably positioning said deflector axially with respect to said open second ends for maximum efficiency of combustion of the particulate fuel;

means for projecting upwardly a stream of air mixed with the combustible fuel into said first end of said inner tubular member, said means including a nozzle extending into a portion of said inner tubular member and a blower forcing the air and fuel mixture through said nozzle into said inner tubular member;

and means positioned near said nozzle for igniting said air and fuel mixture.

4,318,356
ARRANGEMENT FOR SEWING SEPARATE SUCCESSIVE SEAMS ALONG DIFFERENT DIRECTIONS IN A FABRIC MATERIAL

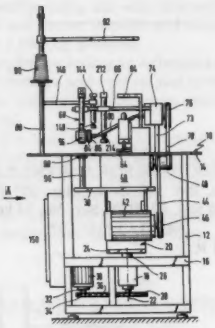
Alfons Beisler, Goldbach, Fed. Rep. of Germany, assignor to Beisler Gesellschaft mit beschrankter Haftung, Goldbach, Fed. Rep. of Germany

Filed Sep. 24, 1980, Ser. No. 190,237

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939238

Int. Cl.³ D05B *3/00*

U.S. Cl. 112—121.14 **1 Claim**



1. An arrangement for sewing a seam along each of n separate directions in a piece of material, n being an integer not less than two, the arrangement comprising:

sewing means;

material support means for supporting a material in which seams are to be sewn thereon; and

control means including means for selectively driving said sewing means to sew each of said seams in said material, feed means for feeding said material to said sewing means, material sense means for sensing the position of said material with respect to said sewing means and means responsive to a signal from said sense means indicating that a seam has been sewn for stopping the driving of said sewing means and for rotating said sewing means so as to align the latter to be in a position with respect to said material to sew a subsequent seam therein.

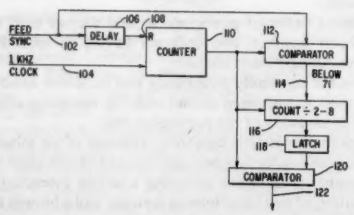
4,318,357
DATA ADVANCING ARRANGEMENT IN A SEWING MACHINE

Philip F. Minalga, Piscataway, and Edward A. Salge, Parlin, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Feb. 27, 1981, Ser. No. 238,775

Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 E **7 Claims**



1. In an electronically controlled stitch pattern sewing machine including at least one stitch forming instrumentality positionally controllable over a predetermined range, memory means for storing pattern stitch information, means for providing a first synchronization signal at a first fixed point during each operating cycle of the sewing machines, means for providing a second synchronization signal at a second fixed point during each operating cycle of the sewing machine, retrieval means utilizing said first and second synchronization signals for operating in timed relation with said sewing machine to retrieve selected pattern stitch information from said memory means, and actuating means responsive to the retrieved pattern stitch information for controlling the position of said stitch forming instrumentality, the improvement comprising:

means for sensing when the speed of operation of the sewing machine is faster than a predetermined speed;

signal generating means responsive to the sensed speed being faster than said predetermined speed for generating a third synchronization signal which occurs after said first synchronization signal and before said second synchronization signal; and

means for substituting said third synchronization signal in place of said second synchronization signal for response thereto by said retrieval means.

4,318,358
PRESSER FOOT

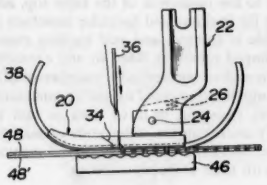
Kenichi Iwamoto, No. 2283, Daishuku-cho, Sano City, Tochigi Prefecture, Japan

Filed Oct. 26, 1979, Ser. No. 88,647

Claims priority, application Japan, Oct. 30, 1978, 53/148164[U]; Mar. 14, 1979, 54/32481[U]

Int. Cl.³ D05B *29/08*

U.S. Cl. 112—235 **44 Claims**



1. A presser foot assembly of a sewing machine, comprising, in combination, a presser foot member having a substantially flat bottom surface extending in a fore-and-aft direction of the presser foot member and a bottom rib longitudinally extending adjacent said bottom surface, the presser foot member being formed with a needle hole which is downwardly open through said rib, and a flexible annular band having a smooth inner peripheral surface circumferentially slidable on said bottom surface in said fore-and-aft direction, one of the presser foot member and the annular band being formed with a groove extending at least in part in parallel with said fore-and-aft direction and the other of the presser foot member and the annular band being formed with a projection slidably received in said groove.

4,318,359
PATTERN GENERATOR FOR ELECTRONIC SEWING MACHINES

Tsuneo Takayama, Musashino, and Yoshinobu Tonomura, Hachioji, both of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Jul. 31, 1980, Ser. No. 175,202

Claims priority, application Japan, Aug. 10, 1979, 54-109445[U]

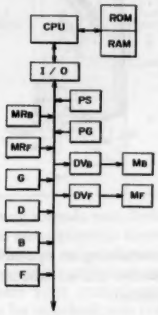
Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 E **6 Claims**

1. An improvement to a pattern generator that produces

enlargements and reductions in patterns to be sewn in a manner that such production is invarient in size while patterns are continuously repeatedly stitched, comprising:

a central processing unit determining beginnings and ends of patterns during stitching and operating in a manner that a pattern can be enlarged and reduced at a beginning thereof in response to an appropriate command; and



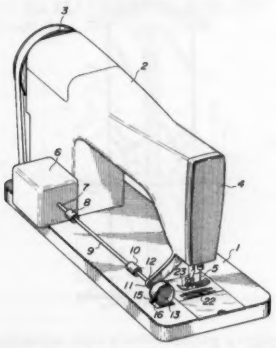
at least one switch connected to the central processing unit and providing an appropriate command to the central processing unit when said at least one switch is operated by a user, whereby during continuous repeated stitching of a pattern, the pattern can be progressively enlarged and reduced at beginnings thereof.

4,318,360

CLOTH FEEDER FOR SEWING MACHINE

Tamio Uemura, Kawasaki; Yoshimasa Ito, Yokohama, and Junichi Ikeda, Tokyo, all of Japan, assignors to Tokico, Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 968,519, Dec. 11, 1978, abandoned. This application May 20, 1980, Ser. No. 151,665
Claims priority, application Japan, Dec. 15, 1977, 52-150932
Int. Cl.³ D05B *27/14*
U.S. Cl. 112—318 **13 Claims**



1. A cloth feeder for use in combination with a sewing machine, said sewing machine having a body installed on a bed, a needle adapted for reciprocal motion coupled to a main driving shaft, and a feed dog for transferring a cloth on said bed, comprising;

(a) a step motor fitted to said body and having an output shaft rotated by a predetermined amount in accordance with each pulse of a plurality of electric pulse signals supplied during one reciprocal movement of said sewing needle;

(b) a rotator means rotatably supported on said bed by said body and coupled to said output shaft of said step motor to be rotated with the rotation of said output shaft, said rotator means clamping a cloth transferred by said feed dog and transferring the cloth in cooperation with said feed dog by the rotation thereof;

(c) a disc fixed to said main driving shaft, said disc rotating with the movement of said sewing needle;

(d) means for detecting the rotation of said disc and generating a position indicating signal comprising a plurality of pulses for identifying the position of said sewing needle during the reciprocal movement thereof; and

(e) a driving pulse generator generating a plurality of electric pulse signals in accordance with the position indicating signal and supplying said electric pulse signals to said step motor;

whereby the feed amount of said cloth transferred by said rotator means during one reciprocal movement of said sewing needle is determined by the number of pulses generated by said driving pulse generator.

8. A cloth feeder for use in combination with a sewing machine, said sewing machine having a body installed on a bed, and a needle adapted for reciprocal motion coupled to a main driving shaft, comprising:

a step motor fitted to the body of said sewing machine having an output shaft which rotates by a predetermined amount in accordance with each pulse supplied by a signal having a plurality of electrical pulses supplied during movement of the sewing needle of said sewing machine;

a rotator rotatably supported on said bed by said sewing machine body and coupled to said output shaft, said rotator means cooperating with a presser roller for transferring a cloth held between said presser roller and rotator means;

a disc fixed to said main driving shaft of said sewing machine, said disc rotating with the movement of said sewing needle;

means for detecting the rotation of said disc and generating a position indicating signal comprising a plurality of pulses for identifying the position of said sewing needle during the reciprocal movement thereof; and

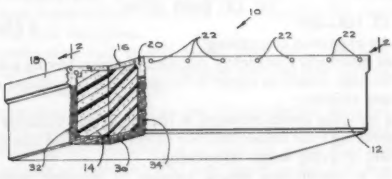
a driving pulse generator generating a plurality of electrical pulse signals in accordance with the position indicating signal and supplying said electric pulse signals to said step motor whereby the cloth is transferred during the reciprocal movement of said sewing needle, the amount of cloth transferred being determined by the number of pulses produced by said driving pulse generator.

4,318,361

LIGHTWEIGHT CONCRETE MARINE FLOAT AND METHOD OF CONSTRUCTING SAME

Wesley W. Sluys, Bellingham, Wash., assignor to Builders Concrete, Inc., Bellingham, Wash.

Filed Aug. 6, 1979, Ser. No. 63,762
Int. Cl.³ B63B *3/00, 5/00, 9/06*
U.S. Cl. 114—263 **18 Claims**



16. A lightweight concrete marine float having the shape of a parallelepiped, comprising a rectangular deck of standard aggregate concrete having a density greater than the density of water, and a rectangular bottom surrounded by upwardly projecting, rectangular side and end walls integrally formed

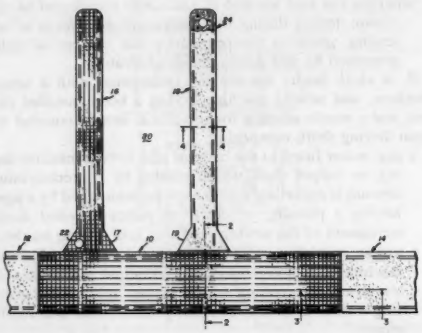
therewith by lightweight aggregate concrete having a density which is less than the density of water, said bottom, side walls and end walls surrounding a buoyant core such that when said float is placed in water, it floats with said end walls and said side walls inherently placed in compression to maximize the strength of said float.

4,318,362

FLOATING CONCRETE DOCK

Henry W. Jung, 18611 Sandy Rd., Castro Valley, Calif. 94546

Continuation of Ser. No. 895,975, Apr. 13, 1978, abandoned.
This application Jun. 16, 1980, Ser. No. 160,113
Int. Cl.³ B63B *35/00*
U.S. Cl. 114—266 **8 Claims**



1. A floating concrete dock comprising:

a header in the form of a double-T channel beam, open at both ends and the bottom, consisting of a deck portion and a pair of stem portions depending downwardly and spaced inwardly from the side edges of said deck portion to impart rigidity to said deck portion, said stem portion having walls opposite the facing walls which slope inwardly and having free end portions defining the channel entrance, said deck portion and said stem portions having longitudinal tensioning means maintaining said deck portion and said stem portion under longitudinal compression; and

buoyancy material disposed wholly within the open channel defined by said deck portion and said stem portions.

4,318,363

LABORATORY PESTICIDE SPRAY CHAMBER

Emanuel E. Moellman, El Cerrito, and Jacqueline L. Robertson, Petaluma, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 9, 1979, Ser. No. 37,242
Int. Cl.³ B05B *10/04*
U.S. Cl. 118—699 **4 Claims**

1. An apparatus comprising:

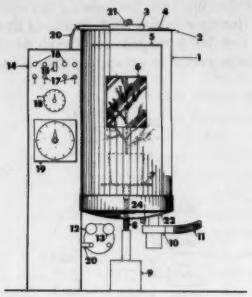
a. an essentially completely enclosed chamber having a door through which an object to be sprayed is introduced into said chamber;

b. a spraying means mounted in the top of said chamber for spraying toxic liquids onto the object within said chamber, said spraying means comprising:

aa. a venturi-type nozzle capable of spraying uniform micro-amounts of liquids;

bb. a syringe and needle liquid delivery means connected to said venturi-type nozzle, said liquid delivery means being capable of delivering precise liquid amounts to said nozzle;

cc. air supply means connected to said venturi-type nozzle capable of supplying air under pressure sufficient to pull liquid from said liquid delivery means when the air passes through said venturi-type nozzle;



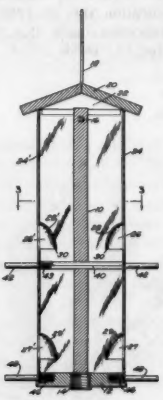
c. purging means comprising an openable vent mounted in the top of said chamber and an exhaust fan mounted in the bottom of the chamber.

4,318,364

BIRD FEEDING DEVICE

Robert E. Bescherer, P.O. Box 23, Bristol, R.I. 02809

Filed Sep. 24, 1980, Ser. No. 190,426
Int. Cl.³ A01K *39/01*
U.S. Cl. 119—51 R **3 Claims**

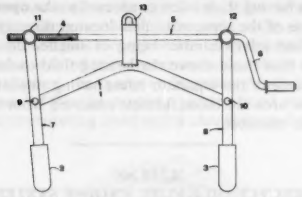


1. A bird feeding device comprising a supporting bottom wall of substantial area surrounded by peripheral edges, means providing a support for said bottom wall, an elongated vertical partition fixed to the bottom wall and rising therefrom intermediate the edges of the bottom wall, a pair of vertically elongated side walls of generally U-shaped cross section having their lower ends engaging said bottom wall and their longitudinal edges directed toward each other and engaging the partition whereby a compartment is provided by each side wall separated by said partition, a plurality of feeding ports in the side walls, means to secure the side walls to said partition and means to cover the upper end of said compartments.

4,318,365
DEVICE FOR LIFTING ANIMALS

Kjell-Ivan Eriksson, Lada 4629, GaxsjöS-830 70 Hammerdal, Sweden

Filed Aug. 26, 1977, Ser. No. 828,168
Int. Cl.[3] A61D 3/00
U.S. Cl. 119—100 5 Claims

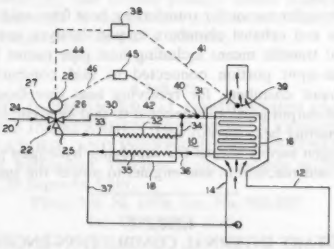


1. A device for lifting animals, said device comprising a rigid yoke and two spaced apart gripping members depending from said yoke for engaging an animal hip bone projections, said yoke including an upwardly arched central portion, attaching means carried by said yoke central portion and projecting upwardly therefrom for attaching said yoke to a lifting mechanism, an arm carrying each of said gripping member in depending relation to said yoke, first hinges connecting intermediate portions of said arms to opposite ends of said yoke and mounting said gripping members for swinging movement relative to said yoke and towards and away from each other, an adjustment mechanism extending between said arms remote from said gripping members and on the side of said yoke away from said gripping members to facilitate location of said yoke immediately adjacent a back of an animal to be lifted, said adjustment mechanism extending through said attaching means and second hinges connecting said arms to said adjustment emchanism for adjusting the spacing of said gripping members.

4,318,366
ECONOMIZER

Gene A. Tompkins, Cedarburg, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Filed Apr. 1, 1980, Ser. No. 136,395
Int. Cl.[3] F22B 33/00; F22D 1/02
U.S. Cl. 122—20 B 4 Claims



1. In combination with a boiler having a combustion chamber and a flue,

a first heat exchanger disposed in said flue for exchanging heat between boiler feed liquid and gaseous combustion products in said flue,

flow dividing means having first and second outlets and an inlet connected to receive boiler feed liquid and having adjustable proportioning means for providing a first portion of said liquid to said first outlet and a second portion to said second outlet,

a second heat exchanger disposed exteriorly of said boiler and said flue and having a first flow path and a second flow path for exchanging heat with liquid flowing in said first flow path, said first flow path being connected in series between said first outlet and said first heat exchanger and said boiler,

said second outlet being connected to said first heat exchanger in a parallel relation to said first flow path,

temperature responsive means disposed in said flue for measuring the temperature of gaseous combustion products in said flue after passage thereof over said first heat exchanger and for positioning said proportioning means to maintain the proportion of feed liquid flowing at each outlet so as to maintain the temperature of said combustion products at a preselected level solely with heat extracted from said flue gases.

3. An economizer for recovering heat from flue gases discharging from a boiler combustion chamber flue comprising:

a first heat exchanger disposed in said flue for exchanging heat between a boiler feed liquid and said flue gases,

a second heat exchanger disposed exterior of said boiler for exchanging heat between unheated feed liquid flowing to said first heat exchange means and heated feed liquid flowing to said boiler from said first heat exchanger means,

an adjustable flow controller having an inlet connected to receive feed liquid and a first outlet connected to said first heat exchanger for delivering a first portion of the unheated feed liquid directly to said first heat exchanger and around the second heat exchanger means and a second outlet connected to the second heat exchanger for delivering a second portion of the unheated feed liquid to the first heat exchanger through the second heat exchanger,

means for coupling said first heat exchange means for delivering said feed liquid to said boiler and through said second heat exchange means,

temperature responsive means coupled to said flow control means and to said flue and operative in response to the temperature of the flue gases after the latter have exchanged heat with the feed liquid flowing through said first heat exchange means to relatively adjust said flow control means whereby the first and second portions of feed liquid flowing to said first heat exchange means and to said second heat exchange means are adjusted for maintaining the temperature of said flue gases at a preselected value,

said economizer transferring waste heat from said flue gases to said feed liquid without withdrawing heat from said boiler said feed liquid being preheated solely with waste heat in said flue gases.

4. A method of controlling the flue gas temperature in a boiler comprising the steps of:

providing a first heat exchanger in the flue of said boiler and a second heat exchanger outside of said boiler,

dividing boiler feed liquid into first and second portions,

delivering said first feed liquid portion directly to said first heat exchanger and said second portion to a first flow path of said second heat exchanger,

exchanging heat in said first heat exchanger between said feed liquid and the flue gases within said flue for recovering heat therefrom,

withdrawing said heated liquid from said first heat exchanger and passing the same to a second flow path of said second heat exchanger,

exchanging heat in said second heat exchanger between said feed liquid flowing in said first and second flow paths,

measuring the temperature of said flue gases after the exchange of heat with said feed liquid in said first heat exchanger,

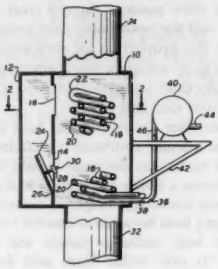
adjusting the relative proportion of said first and second feed liquid portions in relation to said flue gas temperature to maintain said flue gas temperature at a preselected temperature level,

and delivering said feed liquid from said second flow path to said boiler as the feed liquid thereto.

4,318,367
ENERGY RECOVERY DEVICE

Louis T. Antonucci, 1 Callahan St., East Hanover, N.J. 07936

Filed May 30, 1980, Ser. No. 154,938
Int. Cl.[3] F22B *33/00*
U.S. Cl. 122—20 B 17 Claims



1. An energy recovery device for installation in the exhaust of heat producing equipment comprising:

a conduit having a main chamber and a bypass chamber enclosing a portion of said main chamber, said main chamber having a heat conducting inlet and outlet, and a common wall separating said chambers;

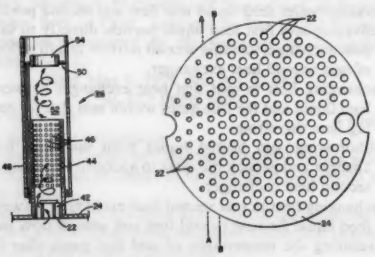
fluid conducting means mounted within said main chamber and having an inlet and an outlet for passing fluid therethrough; and

relief means for connecting said main and bypass chambers in parallel flow relationship to the exhaust heat flowing through said chambers, said relief means acting in response to a differential pressure between said chambers exceeding a predetermined magnitude, said relief means including lower and upper openings in said common wall and a flap mounted on said lower opening and biased to a normally closed position.

4,318,368
ORIFICING OF STEAM SEPARATORS FOR UNIFORM FLOW DISTRIBUTION IN RISER AREA OF STEAM GENERATORS

William R. Carson, and Braj K. Singh, Hixson, both of Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 29, 1980, Ser. No. 220,597
Int. Cl.[3] F22B *1/06;* B01D *53/26*
U.S. Cl. 122—34 3 Claims

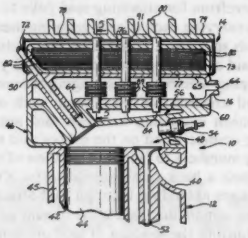


1. A shell-and-tube heat exchanger for the generation of vapor by the indirect transfer of heat from a heating fluid to a vaporizable liquid comprising a generally vertically elongated cylindrical shell, transversely extending tube sheet means dividing the interior of said shell into a vapor generating chamber and heating fluid chamber means, a vertical plate dividing the heating fluid chamber means into an inlet chamber and an outlet chamber, a bundle of U-shaped heat exchange tubes having their inlets connected to the inlet chamber and their outlets connected to the outlet chamber, for circulating heating fluid through said tubes, means for supplying vaporizable liquid to said vapor generating chamber, a separator deck extending transversely across said shell above the tube bundle, a plurality of openings in said deck, a plurality of water-steam separators having their inlets connected to the openings in the deck, some of the separator inlets located directly above the heating fluid inlet chamber being of smaller cross-sectional flow area than those above the heating fluid outlet chamber, and said some of the separator inlets having smaller cross-sectional flow area are those furthest removed from the heating fluid outlet chamber.

4,318,369
RECYCLABLE-FUEL ENGINE SYSTEM

Marshall W. Cronyn, 3232 NW. Luray Ter., Portland, Oreg. 97210

Filed Jun. 6, 1979, Ser. No. 46,120
Int. Cl.[3] F02B *43/08*
U.S. Cl. 123—3 13 Claims



1. A recyclable-fuel engine system comprising

an internal combustion engine having combustion and exhaust chambers which contain heated combustion and exhaust gases, respectively, during engine operation,

catalytic means operable, when supplied with heat, to catalyze the reaction of a reduced form of a hydrocarbon carrier to hydrogen and a dehydrogenated form of said carrier,

heat transfer means for transferring heat from said combustion and exhaust chambers to said catalytic means, said heat transfer means including heat pipe means having a heat-input portion connected to said combustion and exhaust chambers, for receiving heat therefrom, and a heat-output portion connected to said catalytic means for imparting heat thereto, and

hydrogen supply means for supplying hydrogen produced by said reaction to said engine, to power the same.

4,318,370
ROTARY INTERNAL COMBUSTION ENGINES

Siegfried Konther, Rua Azara; Sigfrido K. Chamorro, Rua Cerro Cora, and Udi K. Chamorro, Azara Y Cerro Cora, all of San Lorenzo, Paraguay

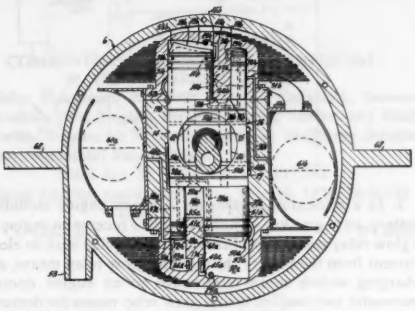
Continuation-in-part of Ser. No. 808,419, Jun. 20, 1977, Pat. No. 4,178,885. This application Nov. 8, 1979, Ser. No. 92,404
Int. Cl.[3] F02B *57/06*
U.S. Cl. 123—44 C 11 Claims

1. A rotary internal combustion engine comprising:

support means defining an axis of rotation and provided with static crankshaft means defining a crank axis which is offset from said axis of rotation;

a rotor assembly which is mounted by said support means to rptate about said axis of rotation and comprises a double-headed piston member having two primary pistons at

opposite ends respectively of an intermediate portion of the piston member and also having two secondary pistons at opposite ends respectively of said intermediate portion, and a double-headed cylinder member defining two primary cylinders in which the two primary pistons are fitted respectively and also defining two secondary cylinders in which the two secondary pistons are fitted respectively, one of said members being connected to said crankshaft means to rotate about the crank axis defined thereby and the other being rotatable about said axis of rotation, whereby each piston reciprocates relative to the cylinder in which it is fitted as the rotor assembly rotates about said axis of rotation, the spaces in the primary cylinders which are bounded by the primary pistons fitted respectively therein constituting combustion chambers and the spaces



in the secondary cylinders which are bounded by the secondary pistons filled respectively therein constituting pumping chambers;

means defining a fuel inlet;

first passage means establishing communication between the fuel inlet and the two combustion chambers, said first passage means including passages formed in the cylinder member and controlled by edge regions of the piston member;

means defining an air inlet; and

second passage means establishing communication between the air inlet and the two pumping chambers and between the two pumping chambers and the combustion chambers respectively, said second passage means including passages formed in the cylinder member and controlled by edge regions of the piston member.

4,318,371

MANIFOLD FOR INTERNAL COMBUSTION ENGINES HAVING INDEPENDENT RUNNERS, A TWO-PLANE LAYOUT, AND INDEPENDENT PLENUMS

James D. McFarland, Torrance, Calif., assignor to Edelbrock Corp., El Segundo, Calif.

Filed Oct. 30, 1978, Ser. No. 955,937
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—52 M **17 Claims**

1. An improved manifold for a V-type internal combustion engine having two parallel banks of cylinders having inlet ports bounded by two horizontal planes comprising:

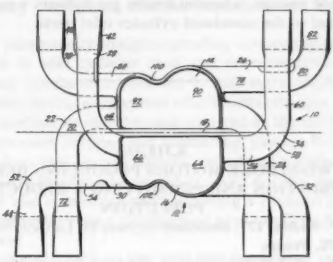
(a) means defining a first plenum disposed for location on one side of the horizontal centerline of the manifold and close to one cylinder bank of the engine;

(b) means defining a second plenum for the manifold next to the first plenum and on the opposite side of the centerline close to the other bank of the cylinders;

(c) means for mounting a carburetor directly above the first and second plenums with the horizontal extent of the plenums being below the carburetor;

(d) first independent runner means from the first plenum having exits bounded by the two horizontal planes, the first runner means having runners to serve longitudinally with respect to the plenum remote cylinders on the same side of the centerline as the first plenum, each of the first runners opening directly into the first plenum, the first runner means having runners crossing over the centerline to serve cylinders that are longitudinally proximate the first plenum;

(e) second independent runner means from the second plenum having exits bounded by the two horizontal planes, the second runner means having runners to serve longitudinally with respect to the plenum remote cylinders on the same side of the centerline as the second plenum, each of the second runners opening directly into the second plenum, the second runner means having runners crossing over the centerline to serve cylinders that are longitudinally proximate the second plenum;



(f) the cross-sectional area of the runners of the first and second runner means being small for high stream velocity and corresponding to the velocity productive of maximum torque;

(g) the length of the runners of the first and second runner means being substantially equal and corresponding to a harmonic frequency of the fundamental frequency of the air at atmospheric temperature that will produce resonance at maximum torque; and

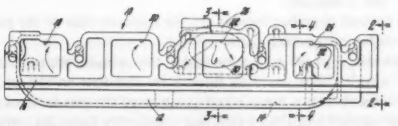
(h) the runners of the first runner means entering the first plenum elevationally above the entrance of the second runner means to the second plenum, the first runner means passing over the second runner means, the first runners being correspondingly longer than the second runners in elevation, the second runners being longer than the first runners in the horizontal.

4,318,372

ENGINE INTAKE MANIFOLD

Joseph W. Bracken, Jr., Redford, and Edward E. Rahbe, Drayton Plains, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 22, 1979, Ser. No. 86,729
Int. Cl.³ F02B *75/18*
U.S. Cl. 123—52 M **2 Claims**



1. An intake manifold for use with an internal combustion engine having a plurality of aligned cylinder air swirl developing inlet ports, the swirl forming qualities of which are affected by inlet gas flow pattern delivery conditions, said manifold comprising an elongated hollow body defining a longitudinal

gas passage, at least three outlet openings extending laterally from the passage in spaced longitudinal alignment through one side wall of said manifold, a single inlet opening connecting laterally with said passage through another side wall of the manifold at a point intermediate the two furthest spaced outlet openings and having only a single outlet opening in one end of the manifold adjacent the inlet opening such that diverse flow patterns are developed in the gas flow passage on opposite sides of said inlet opening, and a single flat flow directing vane positioned longitudinally with respect to said passage at said single outlet opening and extending laterally from the manifold side wall into the gas passage at said single outlet opening in a manner that cooperates with said single outlet opening on said one side of the inlet opening to provide a gas flow pattern in said single outlet opening similar to that provided in outlet openings on the other side of said inlet opening by the open manifold passage, whereby similar gas delivery conditions are provided to the associated cylinder inlet ports.

4,318,373

TWO-STROKE MOTORS PRODUCING BETTER COMBUSTION AND PERMITTING A REDUCTION OF POLLUTION

Jean P. Soubis, 127, Residence Elysees II, La Celle Saint Cloud 78170, France

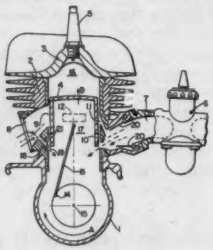
PCT No. PCT/FR79/00024, § 371 Date Aug. 6, 1979, § 102(e) Date Aug. 6, 1979, PCT Pub. No. WO79/00757, PCT Pub. Date Oct. 4, 1979

PCT Filed Mar. 12, 1979, Ser. No. 173,933

Claims priority, application France, Mar. 14, 1978, 78 07324

Int. Cl.³ F02B *33/04;* F02M *25/06*

U.S. Cl. 123—73 R **8 Claims**



1. In a two-cycle engine provided with fuel from a constricted carburetor, the engine comprising:

a cylinder communicating with a crankcase;

a piston reciprocating in the cylinder;

a first chamber located on one side of the piston confronting the crankcase;

a second chamber located on the opposite side of the piston whereat ignition occurs;

scavenging port means located in the cylinder for permitting combustible gases to flow from the first to the second chamber at a preselected position of the piston stroke;

an exhaust manifold extending outwardly from the cylinder for exhausting ignited gases therefrom, the ignited gases being displaced in the exhaust manifold by combustible scavenged residue from the second chamber; and

port means located in the exhaust manifold for directing scavenged residue in the exhaust manifold, into the first chamber for recycling thereby avoiding exhausting of the combustible residue from the exhaust manifold.

4,318,374

PREHEATING SYSTEM FOR A DIESEL ENGINE

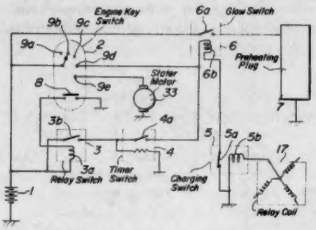
Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 23, 1979, Ser. No. 59,629

Claims priority, application Japan, Aug. 18, 1978, 53-113158[U]; Sep. 18, 1978, 53-113667; Oct. 24, 1978, 53-146050[U]; Nov. 21, 1978, 53-142905

Int. Cl.³ F02P *19/02*

U.S. Cl. 123—179 BG **20 Claims**



1. In a preheating system for a Diesel engine including a battery, an engine key switch adapted to receive an engine key, a glow relay means, a preheating plug supplied with an electric current from the battery through the glow relay means, and a charging switch means responsive to an engine operating parameter and coupled to said glow relay means for deenergizing said glow relay means when the charging switch means detects a starting of said engine, the improvement comprising an instantaneous glow switch closed in response to insertion of the engine key into the engine key switch, and a timer switch closed in response to a closing of said glow switch for exciting said glow relay means for a predetermined period of time after the closing of said glow switch.

4,318,375

INTERNAL COMBUSTION ENGINE

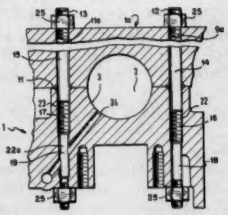
Heinrich Sauer, Nieder-Olmer-Str. 16, 6501 Ober-Olm, Fed. Rep. of Germany

Filed Apr. 9, 1979, Ser. No. 28,269

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2849257

Int. Cl.³ F02F *7/00;* F16C *9/02*

U.S. Cl. 123—195 R **3 Claims**



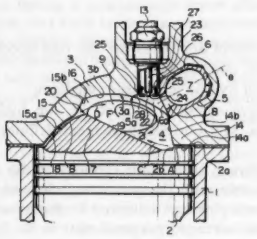
1. In an internal combustion engine suitable for the driving of an aircraft, comprising a bipartite crankshaft case of light metal having at least one bipartite crankshaft bearing having upper and lower halves to receive the crankshaft and screw-thread means arranged on both sides on the periphery of the crankcase bearing in order to clamp the crankshaft bearing halves together, said screw-thread means passing through continuously entirely unthreaded boreholes in said upper crankshaft bearing half, the combination characterized by the fact that in the lower crankshaft bearing half (1) there are

provided continuous boreholes (9, 11) with female threaded sections (22, 23) in the region adjoining but spaced from said upper crankshaft bearing half and that first and second tie rods (8, 10) with first and second male threaded sections (12, 13, 20, 21) at the ends thereof for engagement with clamping nuts and intermediate male threaded sections (16, 17) which are threaded in the corresponding female threaded sections (22, 23) in the lower crankshaft bearing half (1), said first male threaded ends extended beyond said upper crankshaft bearing half and having said clamping nuts tightened thereon to clamp the two halves together and the second male threaded ends extending beyond said lower crankshaft bearing half and having said clamping nuts tightened thereon to place said lower half under compression, whereby stresses induced in said lower half by the crankshaft are relieved without putting said lower half under excessive compression.

4,318,376
COMBUSTION CHAMBER OF AN INTERNAL COMBUSTION ENGINE

Norihiko Nakamura, Mishima; Kiyoshi Nakanishi, Susono; Kazuhiko Itou, Toyota; Toyokazu Baika, Susono, and Shuji Morita, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 31, 1980, Ser. No. 117,293
Claims priority, application Japan, Feb. 26, 1979, 54-20716
Int. Cl.³ F02B *19/12*
U.S. Cl. 123—260 **8 Claims**

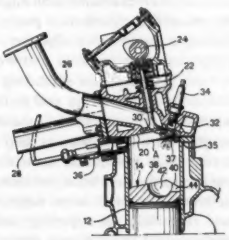


1. An internal combustion engine comprising:
a cylinder block having a cylinder bore therein;
a cylinder head mounted on said cylinder block and having an inner wall;
a first raised portion having on its lower end a substantially horizontal flat bottom face and having an approximately vertical side wall, said first raised portion being formed on the inner wall of said cylinder head so as to project downwards;
a piston reciprocally movable in said cylinder bore and having a top face which has a flat peripheral portion approachable to said flat bottom face so as to create a first squish area therebetween at the end of the compression stroke for spouting a first squish flow along the top face of said piston, the inner wall of said cylinder head and the top face of said piston defining a main combustion chamber therebetween; said vertical sidewall of said first raised portion being exposed to said main combustion chamber, the inner wall of said cylinder head being shaped so that said main combustion chamber has a spherical top face;
an intake valve movably mounted on said cylinder head for leading a combustible mixture into said main combustion chamber;
an exhaust valve movably mounted on said cylinder head for discharging exhaust gas into the atmosphere;
a second raised portion formed on the top face of said piston at a position opposite to said first raised portion with respect to an axis of said piston and having a rear face and a front face exposed to said main combustion chamber, said rear face having a complementary shape relative to the inner wall of said cylinder head and being approachable to the inner wall of said cylinder head so as to create a second squish area therebetween at the end of the compression stroke for spouting a second squish flow which moves forward in the upper interior of said main combustion chamber in the direction opposite to the spouting direction of said first squish flow, said first and second squish flows cooperating with each other to create a swirl motion rotating about a horizontal axis in said main combustion chamber;
a recessed portion formed on said spherical top face of said main combustion chamber at a position adjacent to the sidewall of said first raised portion, defined by a substantially flat wall obliquely extending upwards from an upper end of the side wall of said first raised portion and by a substantially cylindrical wall inclined in the direction opposite to the direction towards which the flat wall of said recessed portion is inclined;
an auxiliary combustion chamber formed in said cylinder head;
a single, substantially straight-extending connecting passage formed in said cylinder head and interconnecting said auxiliary combustion chamber to said main combustion chamber, having an open end which is directly open to the main combustion chamber and arranged on the flat wall of said recessed portion, said connecting passage being arranged so that an axis thereof extends at a right angle relative to the flat wall of said recessed portion, the open end of said connecting passage having a rounded peripheral edge which has a roundness of a radius of less than 0.5 mm; and
a spark plug located in the deep interior of said recessed portion at a position near said open end, having a spark gap located in said main combustion chamber and outside of an extension from said connecting passage.

4,318,377
INTERNAL COMBUSTION ENGINE WITH FUEL INJECTION

Sergio Occella; Giulio Arietti, and Gianpiero Borello, all of Turin, Italy, assignors to Centro Ricerche Fiat S.p.A., Orbassano, Italy

Filed Apr. 24, 1980, Ser. No. 143,389
Claims priority, application Italy, May 22, 1979, 68082A/79
Int. Cl.³ F02B *17/00*
U.S. Cl. 123—279 **11 Claims**



1. Internal combustion engine with spark ignition having pistons slidable in respective cylinders, a cylinder head covering the cylinders, and, associated with each cylinder, a fuel injector and a sparking plug, each cylinder containing a combustion chamber the volume of which is formed predominantly in the associated piston, wherein:
each fuel injector is situated in the side wall of the associated cylinder adjacent the cylinder head;
the portion of each combustion chamber formed in the piston is concentrated in one part of the surface of the piston so as to form extensive squish areas between the cooperating surfaces of the piston and the cylinder head;

the cylinder head is provided, for each cylinder, with a respective shield projecting substantially in the axial direction within the cylinder on the side thereof opposite the associated injector and positioned adjacent the electrodes of the respective sparking plug, the said shield having an impingement surface facing towards the fuel injector, and

each fuel injector is arranged to direct a single compact jet of fuel, at a substantially zero angle of divergence, onto and substantially perpendicularly to said impingement surface of the said shield to cause fine atomization of the fuel in the region of the cylinder adjacent the sparking plug electrodes.

4,318,378

REGULATOR APPARATUS FOR A FUEL INJECTION PUMP

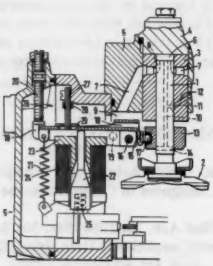
Franz Eheim, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 2, 1979, Ser. No. 81,286

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1978, 2845095

Int. Cl.³ F02D *31/00*

U.S. Cl. 123—357 **8 Claims**



1. A regulator apparatus for the supply quantity of a fuel injection pump for an internal combustion engine comprising a housing, a stroke piston fuel distribution pump in said housing, said pump including a pump work chamber, a reciprocating and rotatable piston, cooperating with said work chamber, an axially disposed bore in said piston extending from said work chamber, a fuel distributor groove in said piston, a radial bore in said piston extending from said axially extending bore to said fuel distribution groove, a cross bore in said piston near one end thereof, a ring slide positioned around said piston for closing and opening said cross bore for either beginning or stopping fuel delivery, a control lever supported within said housing near said ring slide, an adjusting means for limiting movement of said control lever in one direction, a regulator lever supported by said control lever for pivotable movement about one end thereof, said ring slide supported on one end of said regulator lever for movement therewith, a regulatory spring secured to the unsupported end of said regulator lever for applying a force to said regulator lever in a direction opposite from said adjusting screw, a solenoid including a coil, a core, and an armature secured within said housing in an area between said regulator spring and said supported end of said regulator lever, said armature engaging said unsupported end of said regulator lever for applying a force on said regulator lever counter to that of said regulatory spring, and a travel path transducer disposed within said housing for measuring the movement of said regulator lever.

4,318,379

CONTROL APPARATUS FOR A FUEL INJECTION PUMP FOR DIESEL COMBUSTION ENGINES

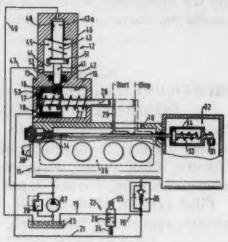
Peter Knorreck, Weissach, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 2, 1979, Ser. No. 81,287

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1978, 2848232

Int. Cl.³ F02D *7/00*

U.S. Cl. 123—387 **3 Claims**



1. In a control apparatus for the fuel injection pump of a diesel engine, comprising:

a source of hydraulic pressure medium;

a corrective element actuated by the hydraulic pressure medium, said correcting element defining a longitudinal axis;

a fuel delivery adjustment element of the injection pump connectable with the correcting element for controlling the quantity of fuel delivered by the injection pump;

a lock slide arranged perpendicular to the longitudinal axis of the correcting element; and

a directional control valve for controlling the flow of the hydraulic pressure medium to the correcting element, such that the correcting element is displaceable between a start position and a stop position, in reaching its stop position the correcting element displaces the fuel delivery adjustment element so as to terminate the fuel delivery of the fuel injection pump, the improvement comprising:

a spring which biases said lock slide into a position in which it prevents movement of the correcting element from its stop position to its start position;

a pressure duct;

pressure surface defining means connected to the lock slide and to the source of hydraulic pressure medium by the pressure duct, the hydraulic pressure medium from the source of hydraulic pressure acts against the pressure surface defining means to displace the lock slide against the biasing force of said spring, to thereby retract the lock slide so that the correcting element can move from its stop position to its start position; and

a relief duct; and

means defining a blind bore, said relief duct connecting the blind bore to the source of hydraulic pressure medium; and wherein:

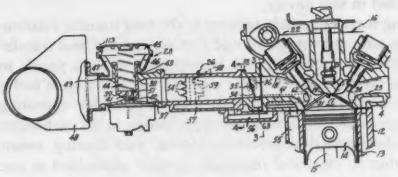
(i) the pressure surface defining means comprises a piston extension of said lock slide, which together with said lock slide forms a differential piston assembly having a pressure shoulder, with the diameter of the piston extension being greater than the diameter of the lock slide; and

(ii) the piston extension extends into said blind bore.

4,318,380
INTAKE SYSTEM FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Hiromitsu Matsumoto, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Oct. 16, 1979, Ser. No. 85,776
Claims priority, application Japan, Oct. 17, 1978, 53-128236
Int. Cl.³ F02B *47/08, 29/02*
U.S. Cl. 123—432 7 Claims

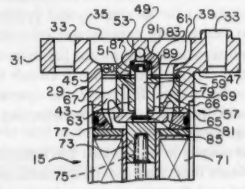


1. An induction system for an internal combustion engine having at least two variable volume chambers in which combustion occurs, said induction system comprising first and second main induction passages each communicating with a respective one of said chambers for delivering a charge thereto, first and second manually operated throttle valves in said first and second induction passages, respectively, for controlling the flow therethrough, first and second auxiliary induction passages having a substantially lesser effective cross sectional area than said main induction passage and communicating with said chamber through auxiliary intake ports, said auxiliary induction passages being in communication with each other and with said main induction passages downstream of said first and second throttle valves for delivering at least a portion of the charge to the chamber in its induction cycle from the portion of the main induction passage serving the other chamber downstream of its respective throttle valve, a charge forming device having an idle fuel discharge a third automatically operated throttle valve juxtaposed to said idle fuel discharge, and means for delivering the fuel charge from said charge forming device to said main induction passages wherein the third valve is automatically actuated in response to the flow through the induction system, the first and second main induction passages have a common inlet, the charge forming device being positioned at the common inlet, there being a wall in opposition to said common inlet from which the first and second main induction passages branch, and means for heating said wall for heating the charge delivered by the charge forming device.

4,318,381
AIR BLEED CONTROL SYSTEM IMPROVMENT

Edward N. Crawford, Defiance, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Filed Feb. 25, 1981, Ser. No. 237,991
Int. Cl.³ F02M *7/00, 23/00*
U.S. Cl. 123—440 12 Claims

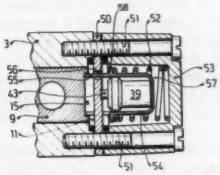


1. In a control system for bleeding air into the high speed and low speed fuel circuits of a carburetor mounted on an internal combustion engine, the carburetor having an air passage to which fuel is delivered through the fuel circuits to mix with air and form a mixture combusted in the engine, the control system including a solenoid to control the bleeding of air into the fuel circuits to control the air-fuel ratio of the mixture produced, the improvement comprising means defining a first air flow path by which air is directed from an air inlet to the high speed fuel circuit and a second air flow path by which air is directed from the inlet to the low speed fuel circuit, means for isolating the first air flow path from the second air flow path so air flowing through one air flow path cannot crossover to the other air flow path, and flow control means for opening and closing the first and second air flow paths, the flow control means opening one flow path prior to opening the other flow path and closing both air flow paths substantially simultaneously.

4,318,382
FUEL INJECTION PUMP

Franz Eheim, Stuttgart; Karl Konrath, Ludwigsburg; Manfred Schwarz, Gerlingen, and Otmar Weiss, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 832,703, Sep. 12, 1977, abandoned. This application Nov. 1, 1979, Ser. No. 90,219
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1976, 2641445
Int. Cl.³ F02D *1/16*
U.S. Cl. 123—502 4 Claims



1. In a fuel injection pump for an internal combustion engine including: a housing; at least one pump piston in said housing; a cam drive arranged in the housing to produce the fuel feeding stroke of the at least one pump piston; means producing a return force; and an adjustable piston connected to the return force producing means and to the cam drive, said cam drive including a rotatable part, with said cam drive being rotatable relative to the direction of rotation of the rotatable part for adjusting the timing of the beginning of the fuel injection by means of the adjustable piston which is acted upon by an rpm-dependent pressure against the return force of the return force producing means, the improvement comprising a control unit mounted to said housing for directly engaging the adjustable piston, said control unit comprising:

an adjustable stop member directly engageable with the adjustable piston;

a temperature sensitive device acting on the adjustable stop member;

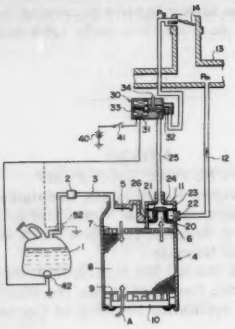
further means for producing a return force; and

a mounting structure in which the temperature sensitive device and the further means are mounted, said temperature sensitive device and said further means being operatively interposed between said adjustable stop member and said mounting structure, whereby from engine starting to engine warm-up, the temperature sensitive device varies the position of the adjustable stop member and consequently the adjustable piston in a direction to advance the beginning point of injection.

4,318,383
VAPOR FUEL PURGE SYSTEM FOR AN AUTOMOTIVE VEHICLE

Hidenori Iritani, and Yasumichi Tomizawa, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 20, 1980, Ser. No. 122,925
Claims priority, application Japan, Mar. 8, 1979, 54-26199
Int. Cl.³ F02M 33/02
U.S. Cl. 123—520 9 Claims



9. A vapor fuel purge system for an automotive vehicle in which a throttle valve controls by its rotation the amount of air-fuel mixture to be sucked through an intake passage to an internal combustion engine, including a cannister installed on said vehicle and filled with material for absorbing fuel vapors vaporated from a fuel source, a purge control valve for controlling communication between said cannister and the intake passage in response to the vacuum near the throttle valve;

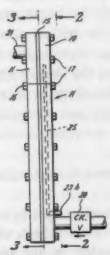
means for detecting the amount of the fuel vapor vaporated from said fuel source; and

means for preventing the fuel vapors from being purged from said cannister to the intake passage through said purge control valve when said detecting means detects that the amount of the fuel vapors is smaller than a predetermined level.

4,318,384
FUEL VAPORIZER

Charles M. Moffett, 2910 W. Michigan, Midland, Tex. 79701

Filed Apr. 13, 1979, Ser. No. 29,822
Int. Cl.³ F02M 31/00
U.S. Cl. 123—557 1 Claim



1. A fuel vaporizing apparatus adapted for supplying normally liquid fuel to an internal combustion engine in a vapor form, including:

a housing forming an enclosed cavity and having a fuel inlet at one end of said cavity and a fuel outlet at the other end of said cavity, said housing having a first heat transfer panel and a second heat transfer panel spaced apart a small uniform preselected distance for forming a cavity with dimensions for producing a thin film of fuel to minimize any heat transfer within the fuel itself and to maximize heat transfer fuel contact with said heat transfer panels as the fuel flows in said cavity from said fuel inlet to said fuel outlet;

means for peripherally sealing between said spaced panels for enclosing said cavity to controllably contain the film of fuel in said cavity;

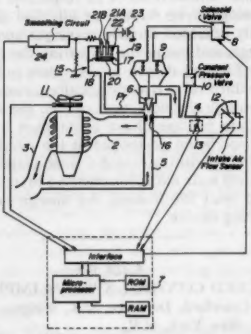
heating means operably secured in the heat transfer relationship with at least one of said first and second heat transfer panels for increasing the temperature of said panels to effect desired heat transfer whereby the thin film of fuel is increased in temperature to a more desirable operating temperature for subsequent vaporization in the carburetor of the internal combustion engine, said heating means having an electrical resistance element embedded in one of said heat transfer panels for converting electrical energy into heat to increase the temperature of said heat transfer panel by electrical operation of said electrical resistant element; and

means for supplying electrical energy to said electrical resistance heating means to provide suitable heat for vaporizing the fuel.

4,318,385
EXHAUST GAS RECIRCULATION CONTROL SYSTEM

Hiroshi Yamaguchi, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 8, 1980, Ser. No. 138,571
Claims priority, application Japan, Apr. 10, 1979, 54-43550
Int. Cl.³ F02M 25/06
U.S. Cl. 123—571 9 Claims



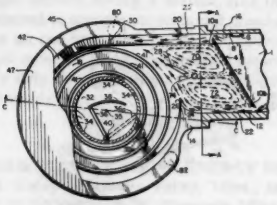
1. In an exhaust gas recirculation control system for controlling exhaust gas recirculation which re-introduces part of an exhaust gas into intake air for an engine, said system including a control valve for controlling exhaust gas recirculation flow rate, operating condition detecting means for detecting operating conditions of the engine, and a control circuit for controlling said control valve depending upon the operating conditions detected by said operating condition detecting means, the improvement comprising:

throttle means arranged in an exhaust gas recirculation passage, and pressure detecting means for detecting pressure downstream of said throttle means, wherein said control valve is controlled by said control circuit such that the detected pressure downstream of said throttle means is compared to a target value which is predetermined depending upon the operating conditions of the engine, thereby feedback controlling the exhaust gas recirculation flow rate.

4,318,386
VORTEX FUEL AIR MIXER

M. Robert Showalter; Kenneth W. Kriesel, and Charles L. Siewert, all of Madison, Wis., assignors to Automotive Engine Associates, Madison, Wis.

Filed Sep. 20, 1979, Ser. No. 77,759
Int. Cl.³ F02M 29/06
U.S. Cl. 123—590 56 Claims

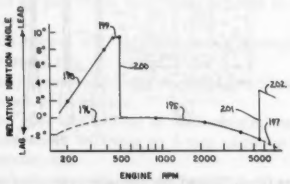


1. A mixing device for homogenizing and vaporizing a fuel-air mixture from a fuel-air metering means of an internal combustion engine for delivery to the intake manifold of said engine, wherein the fuel-air metering means has an airflow passage with a variable restriction therein, said mixing device comprising a mixer housing, said mixer housing having an inlet passage and an outlet passage, said inlet passage being adapted for connection to the discharge side of the air-flow passage of the fuel-air metering means and positioned with respect to the mixer housing so that the air flowing across the variable restriction of the fuel-air metering means into the inlet passage and out into the mixer housing produces angular momentum with respect to the mixer housing outlet passage, said mixer housing being shaped so that the angular momentum of flow produces a vortex rotation about the outlet passage with the outlet passage being the sink of the vortex, said outlet being adapted to be connected to the intake manifold, and means for heating the housing to vaporize the liquid fuel which is deposited thereon by the centrifuging effect of the vortex and the turbulence of the flow.

4,318,387
EXTERNAL PULSE CONTROLLED SPARK ADVANCE UNIT FOR AN INTERNAL COMBUSTION ENGINE IGNITION SYSTEM

Arthur O. Fitzner, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Feb. 1, 1980, Ser. No. 117,667
Int. Cl.³ F02P 5/04
U.S. Cl. 123—602 3 Claims



1. A power unit including a spark advance unit connected to a solid state ignition system selectively supplying ignition sparks to initiate combustion in an internal combustion engine, comprising

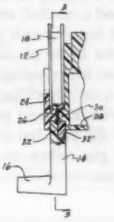
(A) pulse generating means operatively connected to the power unit to provide during each cycle of operation of the power unit a first frequency pulse output and a second frequency pulse output indicative of the operating speed of the power unit,

(B) and transfer means including a retriggerable monostable circuit operatively connected to said pulse generating means and to the ignition system to selectively transfer to rapidly advance the spark angle in response to said first pulse output corresponding to speeds within a first speed range and to selectively transfer to rapidly advance the spark angle in response to said second pulse output corresponding to speeds within a second speed range different than said first speed range.

4,318,388
LAUNCHING DEVICE USING PINCHING FORCE

A. Edward Fogarty, and Bonnie R. Fogarty, both of 3513 School Ave., Sarasota, Fla. 33579

Filed Oct. 27, 1980, Ser. No. 201,185
Int. Cl.³ F41B 15/00
U.S. Cl. 124—10 3 Claims



1. A toy device for launching a disk, a ring or a similar circular-shaped toy missile, comprising:

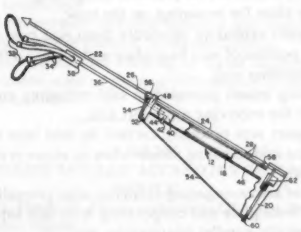
(a) a pair of opposed, dog-legged arms, each of said arms having a first elongated portion with an open channel for engaging the rim of the disk, ring or similar toy missile to be launched and a second elongated portion, positioned at an angle to said first elongated portion, with handle for operation of the toy device; and

(b) a support base having an upper element with a cylindrical protrusion and a lower element with a cylindrical protrusion, said cylindrical protrusions being positioned end-to-end in axially aligned, cylindrical openings through overlapped, dog-legged portions of said arms such that said arms are pivoted together in uncrossed relationship.

4,318,389
POWERFUL, COLLAPSIBLE, COMPACT SPEAR GUN

Zoltan C. Kiss, Jr., 1257 Calle Castano, Thousand Oaks, Calif. 91360

Filed Sep. 22, 1980, Ser. No. 189,723
Int. Cl.³ F41B 7/04
U.S. Cl. 124—22 11 Claims



1. A powerful, collapsible, compact marine spear gun, comprising:

a hollow main housing having a transversely extending hand grip secured to one end thereof;

a spear for use with said spear gun, said spear being formed

in at least two detachably connected parts, and including means for permitting compact storage of one of said two parts on said gun spaced from the other of said two parts, each part of said two parts having a length approximately one-half of the spear's full length, and means for holding, in a launching position, the two parts of said spear rigidly when in a connected full spear length configuration;

elastic sling means for propelling said spear;

elongated extensible support means slidably mounted in said hollow main housing, said support means having a retracted position in which it is substantially within said housing and the extended operative position where it extends outwardly from said housing in the direction away from said grip by a distance approximately equal to the length of said housing; said support including at its outer end means for holding said elastic sling means;

means on said spear for coupling to said elastic means when they are stretched and extended; and

means mounted in said housing near said grip for retaining said spear against the force of said elastic means; and thumb actuated means for releasing said spear;

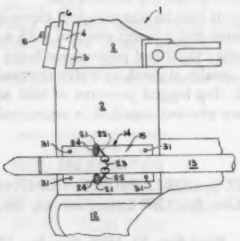
whereby said spear gun may be collapsed to about one half the length of a conventional spear gun when not in use, to facilitate mobility of the user, but still has the power of a conventional spear gun when in its operative, fully-extended configuration.

4,318,390

ARROW RETAINER

George H. Trotter, 7107 Janey St., Shreveport, La. 71108

Filed May 15, 1980, Ser. No. 149,891
Int. Cl.[3] F41B 5/00
U.S. Cl. 124—41 A 11 Claims



1. An arrow retainer for releasing an arrow from a bow responsive to lateral arrow pressure comprising:

(a) a base plate for mounting on the bow;

(b) a support extending upwardly from said base plate and over a portion of said base plate and having a free standing, extending end;

(c) retaining means provided in said extending end of said support for receiving a support arm;

(d) a support arm pivotally carried by said base plate and engaging said retaining means when an arrow is situated in the bow;

(e) a pair of arrow-engaging retaining arms pivotally carried by said base plate and cooperating with said support arm in essentially parallel relationship; and

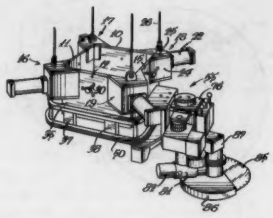
(f) bias means engaging one of said retaining arms to bias said retaining arms and said support arm forward of said extending end of said support responsive to depression of said extending end from lateral pressure exerted by said arrow and release of said support arm from said retaining means, when an arrow is released.

4,318,391

PILE-CUTTING MACHINE AND METHOD OF CUTTING MULTI-SIDED PILES

Edward H. Wachs, Lake Forest, and Horst Kwech, Gurnee, both of Ill., assignors to The E. H. Wachs Company, Wheeling, Ill.

Filed Jun. 2, 1980, Ser. No. 155,602
Int. Cl.[3] B28D 1/04
U.S. Cl. 125—14 16 Claims



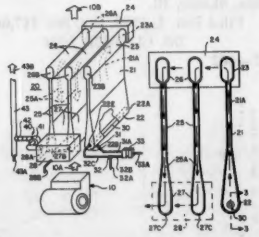
1. A multi-sided pile-cutting machine comprising, a frame positionable at a desired location along the length of a multi-sided pile and having clamp means engageable with the pile for holding the frame at said location, a carriage mounted on the frame for movement in a continuous path around said pile, a cutting head carried by the carriage with a power-driven cutter positioned relative to the carriage to be at full cutting depth in a pile as the carriage moves along a straight side of the pile, and means for withdrawing the cutter from the pile as the carriage travels around a corner of the pile and thereafter causing the cutter to be at full cutting depth in the pile with continued advance of the carriage along succeeding straight sections of the pile.

4,318,392

CATALYTIC GAS-FIRED FURNACE SYSTEM AND METHOD

Richard J. Schreiber; John P. Kesselring, both of Mountain View, and Robert M. Kendall, Sunnyvale, all of Calif., assignors to Acurex Corporation, Mt. View, Calif.

Filed Aug. 11, 1980, Ser. No. 177,368
Int. Cl.[3] F24H 3/02
U.S. Cl. 126—110 R 13 Claims



1. In a gas-fired, forced air furnace system of the type in which a heat exchanger is disposed in a stream of air to be heated,

a first heat exchanger section disposed in said stream of air and including a combustion chamber containing a ceramic fiber matrix burner element, and igniting means for igniting a gas-air mixture supplied to said chamber to burn across the surface of said burner element to produce both radiant heating of the combustion chamber wall portions and convection heating of other wall portions of said first heat exchanger section;

fuel supply means for supplying said burner element with a

gas-air mixture having preselected values of excess air and heat input level; and

a second, counterflow, heat exchanger section disposed in said stream of air including means connecting said second heat exchanger section with said first heat exchanger section to communicate combustion products therebetween for producing convection heating of the walls of said second heat exchanger section, said second heat exchanger section having a surface area of a magnitude preselected in accordance with said preselected values of excess air and heat input to produce sufficient condensation of moisture in said combustion gasses to provide a steady state thermal efficiency for said system of at least about ninety percent.

4,318,393

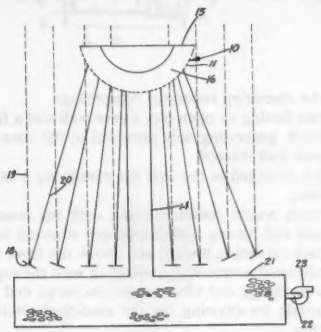
POROUS SURFACE SOLAR ENERGY RECEIVER

Richard J. Goldstein, Golden Valley, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.

Continuation of Ser. No. 747,890, Dec. 6, 1976, abandoned. This application May 30, 1978, Ser. No. 910,609

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—438 **6 Claims**



1. A solar energy receiver system comprising:

(A) a porous surface concentrating receiver or reflected solar radiation comprising:

(1) a housing enclosing an air chamber, said housing being disposed elevated atop a tower in open air,

(2) a porous air permeable wall composed of high temperature heat absorptive material comprising at least one wall of said housing, said wall being directed downwardly,

(a) said air permeable wall being exposed to the atmosphere,

(b) said porous wall thickness being between about 1 mm and 2 cm,

(c) said porous wall having openings over about 10 to 90 percent of its surface,

(d) the pore dimensions of said opening ranging between about 0.05 mm to 5 mm effective hydraulic diameter, and

(e) said porous wall being composed of a substance selected from the group consisting of metallic alloys and refractory non-metallic material capable of withstanding temperatures in the range of about 500° to at least about 1500° C.,

(B) a plurality of concentrating reflectors disposed at a lower level relative to said housing arrayed around the base of the tower to reflect and concentrate sunlight upon said porous wall to produce high radiation fluxes at the wall surface,

(C) heat exchanger means by which heat from heated atmospheric air is transferred to another medium,

(D) air flow conduit means connecting said housing and heat exchanger means, and

(E) means for drawing atmospheric air through said porous wall into said chamber to heat the air, and for withdrawing said heated air from the chamber through the conduit means to the heat exchanger.

4,318,394

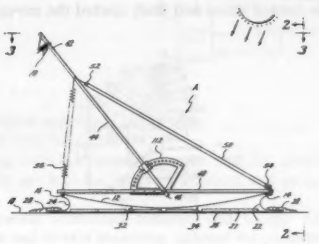
SOLAR ENERGY CONCENTRATOR

William C. Alexander, 1403 Cardinal Hill, Austin, Tex. 78758

Filed Jan. 11, 1980, Ser. No. 111,202

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—438 **18 Claims**



1. A solar energy apparatus, comprising:

(a) absorber means for absorbing solar flux;

(b) flexible reflective means for receiving incident solar flux and concentrating same on said absorber means;

(c) means for mounting said sheet of reflective material on a surface to receive solar flux;

(d) means for moving the position of said absorber means with respect to said flexible reflective means according to the flux distribution of the solar flux received by said absorber means; and

(e) means for adjusting the shape of said flexible reflective means according to the position of said absorber means, said means for adjusting comprising:

(1) a plurality of adjacent compartments formed beneath a plurality of adjacent sections of said flexible reflective means;

(2) means for controlling the pressure in said compartments to control the curvature of said sections of said flexible reflective means;

(3) means for adjusting the cross length of said flexible reflective means relative to the width between said mounting means; and

(4) computer means for coordinating said means for adjusting the cross length and said means for controlling the pressure to control the shape of said flexible reflective means, and

(f) means for pressure isolation between said compartments.

2. The apparatus of claim 1, further including:

initial locator means for forming an initial indication of the approximate angle of the sun with respect to said flexible reflective means.

4,318,395

ENDOSCOPE OCULAR ACCESSORY MOUNTING DEVICE

Ikuo Tawara, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 14, 1980, Ser. No. 149,855

Claims priority, application Japan, May 23, 1979, 54-69289

Int. Cl.³ A61B *1/00*; G03B *17/00*

U.S. Cl. 128—4 **6 Claims**

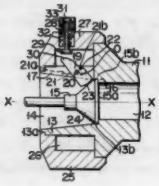
1. An endoscope ocular accessory mounting device comprising:

a mounting body having a central hole and one end;

a flanged section which is formed at said one end of the mounting body and in which a truncated conical cavity for receiving an endoscope ocular section is formed, said cavity having a diameter progressively reduced toward said mounting body and being formed concentrically with said central hole;

an enlongated slit formed in the flanged section in a state extending axially thereof;

a cam plate which is fitted into said elongated slit in a state swingable about a shaft provided in said elongated slit, and having an inner end cam surface assuming a segmental shape whose center lies closer to the mounting body than said shaft and an outer end cam surface formed on the opposite side of said cam plate to said shaft, and said cam plate being provided with an elastic urging means for urging the cam plate to cause said inner end cam surface to be rotated about said shaft toward the mounting body;



a ring member surrounding said flanged section and fixed to said mounting body; and

a cam plate releasing means which pushes the outer end cam surface of the cam plate to rotate said cam plate against an urging force of said elastic urging means, for releasing said cam plate from the endoscope ocular section received in the mounting cavity, said cam plate releasing means comprising a push rod which reciprocably penetrates the ring member at a portion of the ring member which is on the side of said shaft which is opposite the mounting body, an inner end of the push rod being interior of the ring member and being selectively engageable with the outer end cam surface of the cam plate and an outer end of the push rod projecting radially out of the ring member, and an elastic urging member provided in the ring member to elastically urge the push rod radially outward of the ring member.

4,318,396

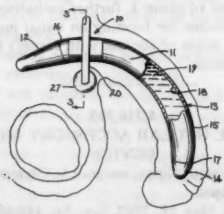
PENILE PROSTHESIS

Roy P. Finney, Tampa, Fla., assignor to Medical Engineering Corporation, Racine, Wis.

Filed May 15, 1980, Ser. No. 150,231

Int. Cl.³ A61F *5/00*

U.S. Cl. 128—79 **4 Claims**



1. A penile prosthesis includes a penile implant comprising an elongated, flexible generally cylindrical member of physiologically inert material having a relatively short proximal stem at one end adapted to be inserted into the root end of the corpus cavernosum of a penis, a tip at the other end adapted to be implanted in the corpus cavernosum of the pendulous penis, an intermediate non-distensible chamber substantially filled with a non-compressible fluid and a clamp means positioned about the outside of the chamber, said clamp means when closed squeezing the chamber to both reduce its effective volume and cause the implant to stiffen.

4,318,397

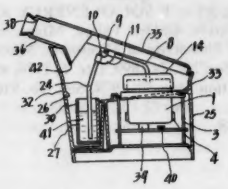
ATOMIZING APPARATUS

Takashi Kobayashi, Kasugai, Japan, assignor to Matsushita Seiko Co., Ltd., Osaka, Japan

Filed Dec. 31, 1979, Ser. No. 108,801

Int. Cl.³ A61M *11/04*

U.S. Cl. 128—200.21 **6 Claims**



1. An atomizing apparatus comprising:

a case having an open top, a rear wall and a front wall;

a steam generating unit provided in the case adjacent the rear wall thereof;

a cup arranged in the case for containing a medicinal solution;

a steam nozzle communicating with the steam generating unit and having a discharge end directed in a discharge path extending toward and above the front wall;

a medicinal nozzle communicating with the cup and having a discharge end close to the discharge end of the steam nozzle for drawing out the medicinal solution from the cup;

a water receptacle disposed in the case adjacent the front wall thereof;

a lid detachably fitting on the case to cover the steam generating unit, the cup, the steam nozzle, the medicinal nozzle and the water receptacle, the lid being integrally provided with a confining tube arranged forwardly and in the discharge path of the steam nozzle;

a water guide provided inside of the case and positioned over the water receptacle; and

a partition plate provided in the case below the lid and extending forwardly and downwardly from the rear wall toward the front wall of the case and having an end positioned in communication with the water receptacle, the partition plate together with the water guide serving to guide drops of water formed on the interior wall surfaces of the case and lid into the water receptacle.

4,318,398

HUMIDITY EXCHANGER FOR A BREATHING APPARATUS

Georg-Wilhelm Oetjen, Lübeck, and Frank Benthin, Lübeck-Hamberge, both of Fed. Rep. of Germany, assignors to Dräger werk Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 13, 1980, Ser. No. 159,393

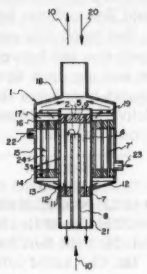
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929584

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—201.13 **4 Claims**

1. A humidity exchanger for a breathing apparatus comprising an outer tubular housing having a passage extending therethrough for passing inspiration and expiration air from an first

opening to an opposite opening, an inner tubular housing extending into said passage and mounted to said second opening, said inner tubular housing having a passage axially extending therethrough from said first open end exterior to said outer housing to a second open end in said outer housing spaced from said first opening, axially spaced first packings disposed in said passage of said inner tubular housing, an insulation air guide tube located within said inner tubular housing in spaced concentric relation therewith adjacent said first open end and extending through one of said first packings into and communication with said passage within said inner tubular housing between said first packings, a first bundle of vapor permeable fiber tubes in said inner housing passage having opposite open end portions extending through said first packings in communication with said first and second openings in said outer housing, axially spaced second packings disposed around said inner housing between said inner housing and said outer housing defining a fluid exchange chamber bound by said second packings, said inner tubular housing and said outer tubular housing, a second bundle of vapor permeable fiber tubes in said chamber having respective opposite open ends extending through said second packings, an inflow space defined between a first one of said second packings, said outer tubular housing adjacent said



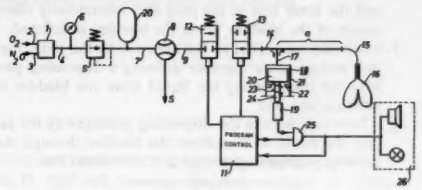
second opening, and said tubular housing, means for circulating a fluid through said fluid exchange chamber, said inflow space being in fluid communication with a first one of said opposite open ends of said second bundle of fiber tubes, said inner tubular housing having a wall portion adjacent said inflow space with wall openings extending therethrough for establishing fluid communication between said passage of said inner housing and said inflow space, a non-return valve means mounted to said inner tubular housing and said outer tubular housing between said first opening and a second one of said second packings and operable to pass a flow of inspiration air from said second bundle of fiber tubes to said first opening and to prevent a flow of expiration air from passing into said second bundle of fibers tubes from said first opening, whereby a flow of the inspiration air may be directed into said second opening of said outer housing and through said inhalation air guide tube, then into said passage of said inner housing, through said wall openings into said inflow space, then through said fiber tubes of said second bundle, through said return valve means and through said first opening, and whereby a flow of expiration air may be directed through said first opening into said tubes of said first bundle and out through said second opening.

4,318,399

RESPIRATOR APPARATUS

Christer Berndtsson, Lidingö , Sweden, assignor to AGA Aktiebolag, Lidingö , Sweden

Filed Nov. 28, 1979, Ser. No. 98,149
Claims priority, application Sweden, Nov. 29, 1978, 7812269
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—204.23 **12 Claims**



1. A respirator apparatus, comprising:

a source of breathing gas;

a breathing catheter having an open end for introducing breathing gas into the lungs of a patient and an opposite end;

gas line means connected between said source and said opposite end of said breathing catheter for providing one way flow from said source to said breathing catheter;

means for establishing timed respiration cycles, each cycle having an inspiration phase and an expiration phase, and for permitting flow of said breathing gas through said catheter, whereby a maximum lung pressure is produced during each inspiration phase;

means connected to said gas line means for sensing the pressure of said breathing gas;

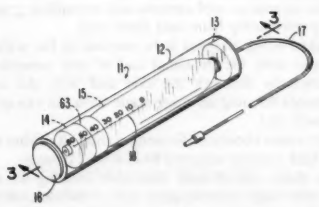
means responsive to said means for establishing timed respiration cycles and to said means for sensing pressure, for producing a control signal when said pressure remains higher than a predetermined level below said maximum lung pressure during the latter portion of each said expiration phase; and means responsive to said control signal for preventing flow of said breathing gas through said gas line means and catheter during the subsequent inspiration phase.

4,318,400

MEDICAL INFUSOR

John R. Peery; Peter F. Carpenter, both of Palo Alto, and William K. Griesinger, Saratoga, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Filed Jan. 18, 1980, Ser. No. 113,224
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—214 F **6 Claims**

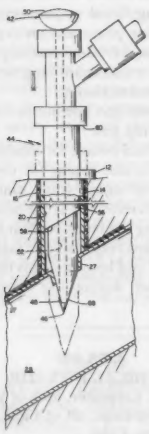


1. An infusor for dispensing a liquid under pressure at a predetermined flow rate comprising in combination:

a. a tubular housing;

b. a plug fixed in one end of the housing having an aperture extending therethrough;
c. a piston within the housing that is adapted to slide axially within the housing;
d. a tubular elastomeric bladder for receiving the liquid under pressure, the ends of which are sealingly attached to the plug and piston, respectively, with the lumen of the bladder communicating with the aperture in the plug;
e. solid lumen filling means within the lumen of the bladder said means extending between the inner side of the piston and the inner side of the plug and substantially filling the lumen of the bladder when the bladder is deflated;
f. a conduit connected to the aperture in the plug, the conduit and aperture together defining a dispensing passageway for transporting the liquid from the bladder to the infusion site; and
g. a flow regulator in the dispensing passageway for permitting the liquid to flow from the bladder through the dispensing passageway at said predetermined rate.

4,318,401
PERCUTANEOUS VASCULAR ACCESS PORTAL AND CATHETER
Clarence E. Zimmerman, Cambridge, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.
Filed Apr. 24, 1980, Ser. No. 143,468
Int. Cl.³ A61M 5/00
U.S. Cl. 128—214 R **15 Claims**

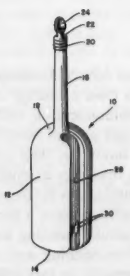


1. Percutaneous blood-vessel access portal for implantation in a patient for an extended period of time comprising
a cannula having a distal end forming an acute angle with respect to the main axis of the cannula,
a skirt secured to said cannula and extending generally radially outwardly from said distal end,
said skirt being adapted to be secured to the wall of a blood vessel with the proximal end of said cannula extending outwardly through the skin and with the axis of said cannula forming an acute angle with the axis of said blood vessel, and
a removable obturator forming a snug fit within the passage of said cannula adapted to seal said passage,
the distal end of said obturator forming an acute angle with respect to the main axis of the obturator matching the angularity of the cannula distal end,
said obturator having adjacent its proximal end a radially outwardly extending flange overlying the margin of said portal cannula proximal end and serving as a stop to locate the distal end of said obturator in registration with the distal end of said cannula.

4,318,402
LIQUID INFUSION CATHETER ASSEMBLY
Vincent L. Vaillancourt, Livingston, N.J., assignor to Critikon, Inc, Tampa, Fla.
Filed Jul. 12, 1979, Ser. No. 56,761
Int. Cl.³ A61M 5/00
U.S. Cl. 128—214.4 **6 Claims**

1. An infusion catheter assembly to dilute liquid delivered to the bloodstream comprising: a receptacle-like hub; a first hollow catheter connected at its proximal end to said hub with its lumen being in liquid communication with the interior portion of said hub for the receipt and transferral of liquid from said hub, said first catheter having an open distal end, a second hollow catheter connected by its proximal end to said hub, but being out of liquid communication with the interior of said hub, said second catheter having an open distal end extending beyond the distal end of said first catheter, said second catheter surrounding said first catheter with an annular space therebetween, said second catheter having a plurality of holes through its peripheral surface in a central region thereof, said first catheter being located within said second catheter with the open distal end of said first catheter being further distal than any of said holes, so that blood may enter through said holes, flow over said first catheter, and between said distal open end of said first catheter and the open distal end of said second catheter, mix with liquid transferred from said first catheter, said mixture being delivered to the bloodstream from the open distal end of said second catheter.

4,318,403
FOLDABLE NOZZLE SYRINGE
Vincent R. Sneider, 3422 Hallcrest Dr., NE., Atlanta, Ga. 30319
Filed Jul. 24, 1980, Ser. No. 172,081
Int. Cl.³ A61M 1/00
U.S. Cl. 128—232 **18 Claims**



1. A syringe for vaginal douche, swab or like applications, including:
(a) a flexible container having an outlet at one end thereof;
(b) a discharge nozzle attached at said outlet of the flexible container with the nozzle having an elongated portion disposed to be folded near its connection to be positioned alongside the flexible container;
(c) a longitudinal groove formed in and at the side of said flexible container and open outwardly thereof so that when the flexible container is filled said longitudinal groove in the side of the flexible container is shaped to

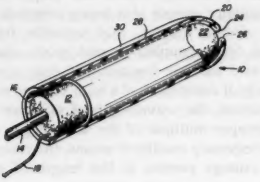
receive and releasably retain the discharge nozzle within said groove.

4,318,404

APPLICATOR AND TAMPON

Thomas W. Cunningham, 3580 Emerywood La., Orlando, Fla. 32806

Filed May 29, 1979, Ser. No. 43,231
Int. Cl.³ A61F *15/00*
U.S. Cl. 128—263 **16 Claims**



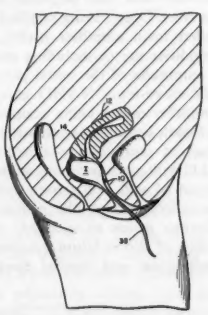
1. An applicator for a member comprising:
a member having a surface;
a flexible applicator along said surface, said applicator having a convolution so as to double said applicator upon itself to form parallel walls each lying in contact with the other, and with said convolution therebetween, the outside wall having a sufficient length to extend along said member from said convolution to the end of said member opposite said convolution; and wherein
said surface of said member may be exposed by grasping said outside wall at said opposite end of said member, and a relative movement of said outside wall of said applicator with respect to said member, causing said applicator to roll at said convolution.

4,318,405

TAMPON AND DRUG DELIVERY DEVICE

Vincent R. Sneider, 3422 Hallcrest Dr., N.E., Atlanta, Ga. 30319

Filed Jul. 24, 1980, Ser. No. 171,845
Int. Cl.³ A61F *15/00*
U.S. Cl. 128—263 **9 Claims**



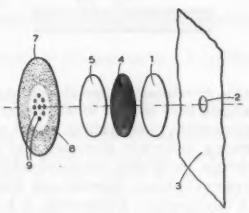
1. A tampon and drug delivery device, including:
(a) a generally tubular inserter means having an entering end and a rear end;
(b) a tampon slidably received and retained within said tubular inserter and adapted for discharge from and through the entering end;
(c) ejecting means slidably received within the tubular inserter and at the rear end of said tubular inserter means, said ejecting means providing for the ejection of said tampon from the entering end of the inserter;
(d) a capsule of disintegratable material at least partially embedded in and movably held in the entering end of said tampon for delivery into a vaginal cavity, or the like, by ejection from said inserter means, and
(e) a capsule retaining means formed at and on the entering end of said tubular inserter means, said retaining means including an inwardly directed end portion having an aperture sized so as to engage and retain said capsule and with said entering end slotted to define and provide leaf segments biased to surround and engage that portion of the capsule protruding from said tampon.

4,318,406

COLOSTOMY OR ILEASTOMY APPLICANCE

Patrick H. McLeod, London, England, assignor to Matburn (Holdings) Limited, London, England

Continuation of Ser. No. 811,531, Jun. 30, 1977, abandoned.
This application Jul. 24, 1979, Ser. No. 60,177
Claims priority, application United Kingdom, Jul. 6, 1976, 27976/76
Int. Cl.³ A61F *5/44*
U.S. Cl. 128—283 **7 Claims**



1. An ostomy bag having a vent opening and a filter for removing odors from gases exiting through the vent, secured to the bag so as to cover the vent opening, the filter comprising a first layer of weldable material which is gas permeable and water impermeable, the first layer being in contact with the interior of the bag so as to form the gas inlet side of the filter, a second outer layer of weldable material which is gas permeable and water impermeable, and a layer of activated carbon fiber cloth sandwiched between the first and second layers which form an envelope therefor completely enveloping the surfaces of said carbon fiber cloth, the first and second layers and carbon cloth layer being secured together by an annular weld extending between the first and second layers and passing through the carbon cloth, including the outer periphery of the barbon cloth thus eliminating passage of gas around the edges of said carbon cloth.

4,318,407

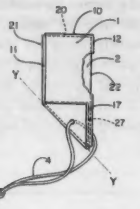
FOLDED TAMPON PLEDGET

Lin-Sun Woon, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Aug. 28, 1980, Ser. No. 182,097
Int. Cl.³ A61F *13/20*
U.S. Cl. 128—285 **13 Claims**

1. A folded tampon pledget comprising a flat surface having at least four sides, each of said sides being of uneven length,

two of said sides being longitudinal, parallel and each forming a right angle with a common transverse side, and the shorter of



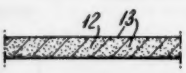
said longitudinal, parallel sides forming an obtuse angle with a fourth side.

4,318,408

ABSORBENT PRODUCTS

Ralf Korpman, Bridgewater, N.J., assignor to Permacel, New Brunswick, N.J.

Filed Oct. 29, 1979, Ser. No. 88,881
Int. Cl.[3] A61F *13/16*
U.S. Cl. 128—287 **8 Claims**



1. An elastic non-disintegrative absorbent product having a thickness ranging from about 1 to 60 mils comprising a water-insoluble substantially non-swelling matrix of an elastomeric polymer bearing uniformly dispersed and at least partially imbedded therein particulate water-insoluble water-swellable organic polymer absorbent wherein said elastomeric polymer comprises a thermoplastic elastomeric A-B-A or A-B block copolymer in which A represents an alkenylarene polymer block and in which B represents a polymer block of a conjugated lower aliphatic diene or lower aliphatic alkene and wherein said water-insoluble, water-swellable organic polymer absorbent is a cross-linked polymer having an average molecular weight per cross-linkage in the range of from about 13,000 to about 276,000.

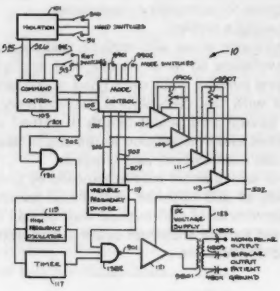
4,318,409

ELECTROSURGICAL GENERATOR

Roger L. Oosten, New Port Richey, Fla., assignor to Medical Research Associates, Ltd. #2, South Clearwater, Fla.

Filed Dec. 17, 1979, Ser. No. 104,692
Int. Cl.[3] A61B *17/39*
U.S. Cl. 128—303.14 **32 Claims**

1. A generator for electrosurgery comprising first and second command switches for selecting command status of operation, a command control means coupled to said first and second command switches for preventing simultaneous use of said first and second command switches, a first mode switch for selecting the mode of operation when the first command switch is activated, a second mode switch for selecting the mode of operation when the second command switch is activated, a mode control means coupled to said first and second mode switches for determining the mode of operation indicated by said first and second command switches and said first and second mode switches, said command control means being coupled to said mode control means by first and second command lines, first, second, third and fourth voltage amplifiers, said amplifiers being coupled to said mode control means so that one of said amplifiers corresponding to the mode of operation indicated by said first and second mode switches and said first and second command switches is activated by said mode control means, a first NAND gate having two inputs, the two inputs of said first NAND gate being coupled respectively to the said first and second command lines, high frequency oscillator means and low frequency oscillator means coupled to the output of said first NAND gate so that said high frequency oscillator means and low frequency oscillator means are activated when either command line is activated, a three-input NAND gate, the output of said low frequency oscillator means being coupled to a first input of said three-input NAND gate, the output of said high frequency oscillator means being coupled to a second input of said three-input NAND gate, a variable frequency divider means, the output of said high frequency oscillator means also being coupled to said variable frequency divider means, said variable frequency divider means also being coupled to said mode control means, the output of said variable frequency divider means being a first interrupt signal comprised of a high voltage portion and a low voltage portion, the wavelength of said first interrupt signal being an integer multiple of the wavelength of the output of said high frequency oscillator means, the ratio of the length of said high voltage portion to the length of said low voltage



portion being altered by said variable frequency divider means according to the mode of operation indicated by said first and second mode switches and said first and second command switches, the output of said variable frequency divider means being coupled to the third input of said three-input NAND gate, a voltage-controlled main amplifier means, the output of said three-input NAND gate being coupled to the input of said voltage-controlled main amplifier means, said voltage-controlled main amplifier means including means for selectively increasing the amplitude of the initial pulse of each group of pulses from said three-input NAND gate, said voltage-controlled main amplifier means being coupled to said first, second, third and fourth amplifiers so that said amplifiers control the output level of said voltage-controlled main amplifier means, and a D.C. voltage supply and an isolation transformer means, the output of said voltage-controlled main amplifier means being coupled through the primary winding of said isolation transformer means to said D.C. voltage supply, the secondary winding of said isolation transformer means providing isolated monopolar and bipolar electrosurgical voltage output.

4,318,410

DOUBLE LUMEN DILATATION CATHETER

Albert K. Chin, San Francisco, Calif., assignor to Thomas J. Fogarty, Palo Alto, Calif.

Filed Aug. 7, 1980, Ser. No. 176,009
Int. Cl.[3] A61B *17/00*; A61M *29/02*
U.S. Cl. 128—325 **5 Claims**

1. Apparatus for dilating a partially occluded section of a blood vessel and for introducing a radiopaque fluid into the vessel comprising an elongated flexible catheter, balloon means attached to the distal end of said catheter, a fluid port in

said catheter through which radiopaque fluid may be introduced into said vessel, means defining a fluid passageway within said catheter whereby fluid may be introduced into said

balloon means, and slide valve means disposed in said catheter and selectively movable relative to said port whereby said port can be brought into communication with said fluid passageway and out of communication therewith.

4,318,411
HEART PACEMAKER

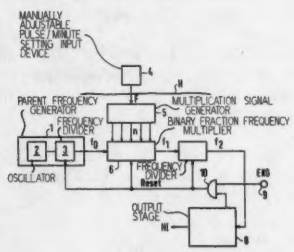
Hakan Elmqvist, Bromma, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 9, 1980, Ser. No. 185,546

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939254

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 PG **6 Claims**



1. A heart pacemaker comprising a controllable pulse generator for generating the heart pacemaker pulses, a parent frequency generator with prescribable parent frequency, and a control circuit including a setting generator for setting desired pulse repetition rates of the pulse generator for the heart pacemaker pulses as a function of the setting value of the setting generator, said setting generator comprising a binary frequency multiplier (6), a multiplication signal generator (5), and a pulse per minute adjustable setting input device (4), the parent frequency signal (f_0) of the parent frequency generator (1) being supplied to the binary frequency multiplier (6) together with a binary multiplication signal (n) of the multiplication signal generator (5), and the pulse per minute setting input device (4) controlling the binary multiplication signal (n) to adjust the same as a function of a pulse per minute setting value (F) of the pulse per minute setting input device (4), said binary frequency multiplier (6) converting the parent frequency (f_0) of the parent frequency signal into a secondary frequency (f_1) which is composed of a fraction ($f_0/(n_{max}+1)$) of the primary frequency prescribed by the multiplier multiplied by the binary value (n) of the multiplication signal.

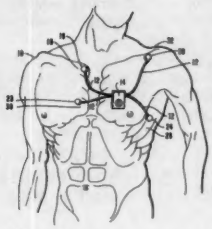
4,318,412
ARRANGEMENT FOR CARDIAC ELECTRODE IMPLEMENTATION

Albert L. Stanly, Los Angeles, and Gunther W. Wimmer, Saugus, both of Calif., assignors to Gilbert P. Hyatt, Cypress, Calif.

Continuation of Ser. No. 495,091, Aug. 5, 1974, Pat. No. 3,991,747. This application Nov. 15, 1976, Ser. No. 741,917

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—696 **3 Claims**



1. A four electrode biological monitoring system comprising:

a manubrium electrode for generating a manubrium position related signal;

a clavicle electrode for generating a clavicle position related signal;

a V_5 position electrode for generating a V_5 position related signal;

a V_1 position electrode for generating a V_1 position related signal; and

signal processing means for generating a processed output signal in response to the manubrium position related signal, the clavicle position related signal, the V_5 position related signal, and the V_1 position related signal; wherein said signal processing means includes means for generating a CM_5 lead related signal in response to the manubrium position related signal and the V_5 position related signal.

4,318,413
ULTRASONIC DIAGNOSTIC APPARATUS

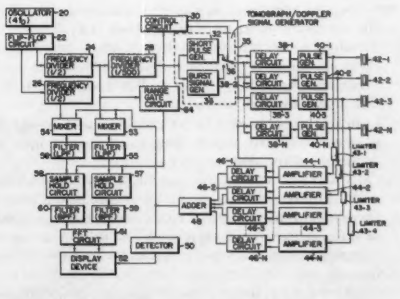
Kazuhiro Iinuma, and Kinya Takamizawa, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 12, 1979, Ser. No. 84,170

Claims priority, application Japan, Oct. 20, 1978, 53-129386; Oct. 20, 1978, 53-129387

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—660 **10 Claims**



1. An ultrasonic diagnostic apparatus comprising:

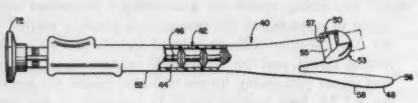
means for generating a clock pulse signal;
means for dividing the clock pulse signal to generate a rate signal;
a single ultrasonic probe including a plurality of electro-acoustic converting elements for transmitting an ultrasonic wave in response to a drive signal supplied thereto;
drive means for alternately supplying to said ultrasonic probe a first drive signal for obtaining tomographic image information and a second drive signal for obtaining blood flow information, the timing in which these drive signals are supplied to the ultrasonic probe being in synchronism with the rate signal;
means for amplitude-detecting a receiving signal when said probe receives a reflecting ultrasonic wave corresponding to the first drive signal;
means for phase-detecting a receiving signal when said probe receives a reflecting ultrasonic wave corresponding to the second drive signal, the phase detection being effected based on a difference in frequency between the clock pulse signal and the receiving signal; and
means for displaying a tomographic image obtained from said amplitude-detecting means and blood flow information obtained from said phase-detecting means.

4,318,414

PROBE FOR OBTAINING CERVICAL MUCUS

Samuel R. Schuster, Wellesley; Louis Kopito, and Harold Kosasky, both of Brookline, all of Mass., assignors to Ovutime, Inc., Newton, Mass.

Continuation-in-part of Ser. No. 795,097, May 9, 1977, Pat. No. 4,157,709. This application Jun. 8, 1979, Ser. No. 46,669
The portion of the term of this patent subsequent to Jun. 12, 1996, has been disclaimed.
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—759 **14 Claims**



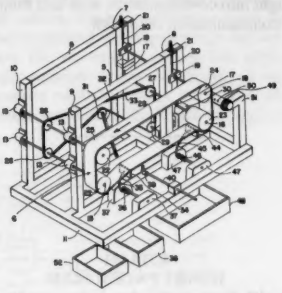
1. A vaginal probe comprising:
(a) sheath means characterized substantially by an original shape extending substantially along an axis of elongation for insertion into the vaginal cavity, said sheath means including forward extremity means connected thereto and intermediate mouth means, said sheath means being sufficiently rigid to provide a passage therethrough and to substantially maintain said original shape during said insertion;
(b) shaft means having a rigid rearward portion and a semi-rigid forward portion for causing closing of said mouth means when in one condition and causing opening of said mouth means when in another condition;
(c) specimen sampling means for confinement within said sheath means when in one condition and for protrusion through said mouth means when in another condition, said specimen sampling means extending through a predetermined region, when in said other condition, from said mouth means to the cervical os;
(d) said specimen means being confined within said sheath means when said sheath means is inserted into and is withdrawn from the vaginal cavity;
(e) a control means, said specimen means being in contact with the cervical os when said extremity means is seated in the posterior fornix, said control means is in one condition so that said mouth means is open, and said specimen means is in one condition so that it protrudes through said mouth means;
(f) said forward extremity means having a configuration for seating in the posterior fornix and being a mechanical reference ranging in length along said axis from 1 to 5 centimeters and maintaining said length along said axis during said insertion.

4,318,415

APPARATUS FOR REMOVING CORN FROM COB

George H. Robertson, Berkeley, and Daniel F. Farkas, Piedmont, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 15, 1980, Ser. No. 187,380
Int. Cl.³ A01F *11/06*
U.S. Cl. 130—8 **10 Claims**



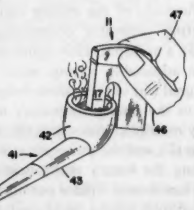
1. An apparatus for removing whole, intact kernels of corn from the cob, which comprises:
(a) a frame,
(b) friction means attached to said frame for removing whole, intact kernels of corn from the cob,
(c) means attached to said frame for driving said friction means, and
(d) means attached to the frame for maintaining the friction coefficient of said friction means, which includes
(1) a means for scraping the surface of said friction means,
(2) a means for washing the surface of said friction means, and
(3) a means for drying the surface of said friction means such that the coefficient of friction of said surface is sufficient to detach kernels of corn, intact, from the cob.

4,318,416

LIGHTER WITH INTEGRAL PIPE TAMPER

John R. Thornhill, 6521 Stone Bridge Rd., Santa Rosa, Calif. 95405

Filed Apr. 24, 1980, Ser. No. 95,584
Int. Cl.³ A24F *9/02*
U.S. Cl. 131—243 **1 Claim**



1. A combination lighter and integral pipe tamper comprising

a lighter case having an openable top portion for exposing a flame to light tobacco in a pipe or the like,

said case having a deep indentation in the bottom thereof in spaced relation to a first side of said case and defining between said indentation and said first side of said case an integral fixed tamper leg adapted to be inserted in a pipe bowl for tamping tobacco therein, and

an integral shell adapted for slidable engagement within said case through said openable top portion with absorbant material therein for retaining lighter fluid therein and said shell having a cut-out lower corner portion with a height substantially equal to the depth of said case indentation and a width substantially equal to the width of said case cavity and said tamper leg.

4,318,417

FLAVORANT COMPOSITION FOR TOBACCO, METHOD FOR PRODUCING THE SAME TOBACCO PRODUCT COMPRISING SAID COMPOSITION

Matsushita Hiroshi, and Shinozaki Matsue, both of Yokohama, Japan, assignors to The Japan Tobacco & Salt Public Corporation, Japan

Filed Jan. 21, 1980, Ser. No. 113,747

Claims priority, application Japan, Jan. 30, 1979, 54/8793

Int. Cl.³ A24B *3/12*

U.S. Cl. 131—274 **23 Claims**

9. Tobacco product comprising a flavorant composition for tobacco of synthesized inorganic ion-exchanger which is selected from the group consisting of zirconium phosphate, zirconium polyphosphate, zirconium heteropolyphosphate, hydrous zirconium oxide and hydrous titanium oxide and to which tobacco flavorant has been adsorbed.

4,318,418

SMOKING COMPOSITIONS

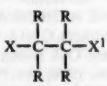
Edward B. Sanders, and Yoram Houminer, both of Richmond, Va., assignors to Philip Morris, Incorporated, New York, N.Y.

Filed Jun. 5, 1979, Ser. No. 45,716

Int. Cl.³ A24B *15/38*

U.S. Cl. 131—278 **14 Claims**

1. A smoking composition comprising an admixture of (1) combustible filler selected from natural tobacco, reconstituted tobacco and non-tobacco substitutes, and (2) between about 0.0005 and 2 percent, based on the total weight of filler, of a polyheterocyclic compound corresponding to the formula:



wherein R is a substituent selected from hydrogen and alkyl groups containing between 1 and about 10 carbon atoms; X is a substituent selected from pyrazyl and alkyl-substitued pyrazyl, where each alkyl group contains between 1 and about 10 carbon atoms, and the X substituent contains a total of between 4 and about 16 carbon atoms; X^1 is a substituent selected from pyrazyl, alkyl-substituted pyrazyl, pyridyl and alkyl-substituted pyridyl, where each alkyl group contains between 1 and about 10 carbon atoms, and the X^1 substituent contains a total of between 4 and about 22 carbon atoms; and any adjacent R and X or any adjacent R and X^1 when taken together with connecting elements form an alicyclic structure.

4,318,419

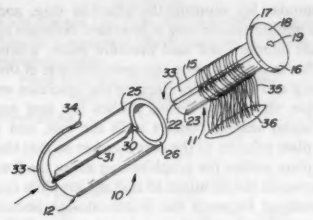
PERMANENT WAVE MAINTAINING APPARATUS

Nathan J. Puckett, 50 King St., New York, N.Y. 10014

Filed Dec. 15, 1980, Ser. No. 216,193

Int. Cl.³ A45D *2/00*

U.S. Cl. 132—40 **6 Claims**



1. Apparatus for maintaining a permanent wave upon hair growth without reprocessing previously waved end portions of hair, said apparatus comprising a generally cylindrical core for winding thereabout of a previously waved hair end portion, an enlarged closure on one end of said core, a cylindrical housing having one end open and the other end closed and formed with a longitudinal slot extending inwardly from said open housing end, said housing being internally sized to spacedly receive said core with said closure in closing engagement with said open end of said housing so that the core-wound previously waved hair is inside the housing and the next adjacent hair extends through said slot exteriorly of said housing for winding about said housing, and a seal on said housing for effectively sealing said slot with hair extending through said slot, whereby the externally housing-wound hair may be processed by soaking with solution while the core-wound hair is effectively sealed from the solution.

4,318,420

BALL VALVES

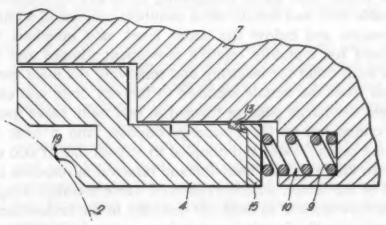
Michael A. Calvert, Kirkcaldy, Scotland, assignor to T. K. Valve Limited, Dunfermline, Scotland

Filed Oct. 1, 1980, Ser. No. 192,922

Claims priority, application United Kingdom, Oct. 4, 1979, 34459/79

Int. Cl.³ F16K *13/04*

U.S. Cl. 137—74 **2 Claims**



1. A ball valve, especially for use between adjacent sections of a pipe line conducting an inflammable fluid, said ball valve comprising a valve housing, a valve ball in said housing and having a through-passage, a trunnion in said housing projecting into a first socket in said ball, a control shaft projecting into and drivingly engaging a second socket in said ball diametrally opposed to said first socket, a pair of annular valve seat members spaced axially of the pipe line and carrying heat-destructible sealing rings, and spring means urging said seat members into sealing engagement with the ball; in which each seat member, at its end adjacent the spring means has a frusto-coni-

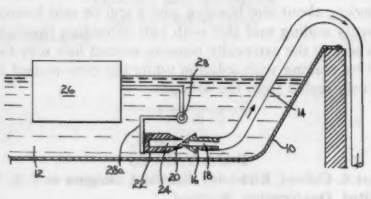
cal portion which tapers from a shoulder on the seat member towards the end face of the latter, a graphite ring is fitted between said frusto-conical portion and the adjacent peripheral wall of the housing, a first heat-destructible spacer ring is located between said graphite ring and said shoulder, an annular pressure plate is located between the end face of the seat member and the spring means and is abutted by the latter and has an annular lip abutting the graphite ring, and a second heat-destructible spacer ring is provided between the end face of the seat member and said pressure plate; whereby, in the event of fire in a pipe line on the upstream side of the valve, the sealing ring and said spacer rings on the upstream seat member disintegrate, the spring means pushes the seat member into metal-to-metal sealing contact with the ball, and pushes the pressure plate relative to the seat member so that the lip on the pressure plate pushes the graphite ring along the frusto-conical portion towards the shoulder so that the graphite ring becomes tightly wedged between the frusto-conical portion and the adjacent peripheral wall of the housing and seals the clearance passage therebetween against the spread of fire therealong.

4,318,421

FLOAT CONTROLLED SYPHON VALVE FOR SWIMMING POOL COVER

Geoffrey A. Ward, 11 Judd Parade, Cheltenham 3192, Victoria, Australia

Continuation-in-part of Ser. No. 912,004, Jun. 2, 1978, abandoned. This application Jul. 14, 1980, Ser. No. 167,738
Claims priority, application Australia, Jun. 2, 1977, 0323/77
Int. Cl.³ F16L *43/00*; F16K *31/20, 33/00*
U.S. Cl. 137—135 **8 Claims**



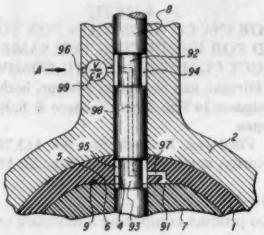
1. A float controlled syphon discharge valve for syphoning dirt containing accummulated water in the depression of a swimming pool cover out a syphon discharge conduit extending into the cover depression below the level of the accumulated water, said valve comprising generally cylindrical cooperable male and female valve members positioned within the depression and below the water level, said members being disposed for mutually relative movement toward and away from each other for inserting and removing the male member in and from the female member to thereby open and close a syphon discharge passage formed in said male valve member and connected to the discharge conduit; and a float body floating on the water and coupled to at least one of said members for effecting said insertion and removal in response to the level of the water, wherein the male valve member is tapered at the forward end to facilitate insertion in the female member and wherein the female member has a central recess closed at one end for receiving the male member and for blocking said syphon discharge passage, said female member being of a more yielding material than the male member and having a first portion remote from the male member which is relatively thick-walled and unyielding for orienting the female member with the male member and a second portion formed as a taper from said first portion to surround said recess for receiving the male member and sealingly engaging same upon its insertion responsive to the action of the float body, said second portion being relatively thin-walled to provide sufficient flexibility to envelop particles of dirt in the area of sealing engagement with the male member and to wipe away the particles of dirt from the area of sealing engagement.

4,318,422

BUTTERFLY VALVE

Mikimaro Nakanishi, Yao, and Kiyoji Tanimoto, Katano, both of Japan, assignors to Tomoe Technical Research Company, Higashi-Osaka, Japan

Filed Dec. 5, 1979, Ser. No. 100,637
Claims priority, application Japan, Dec. 19, 1978, 53-173187[U]
Int. Cl.³ F16K *1/226, 1/36*
U.S. Cl. 137—246 **21 Claims**



1. A butterfly valve comprising an annular valve body,
a ring-shaped elastic valve seat fitted to an inner circumference of the valve body, said valve seat having diametrically opposed openings, an annular sliding face around each of the openings and at least a pair of recesses charged with lubricant on each sliding face, said pair of recesses being disposed symmetrically with respect to the respective opening of the valve seat,
a valve stem pivotally fitted to the valve body through the openings of the valve seat, and
a valve disk fitted to the valve stem, said valve disk having a pair of annular sliding faces around the valve stem, each sliding face of the valve disk slidably contacting a respective corresponding sliding face of the valve seat during rotation of the valve disk.

4,318,423

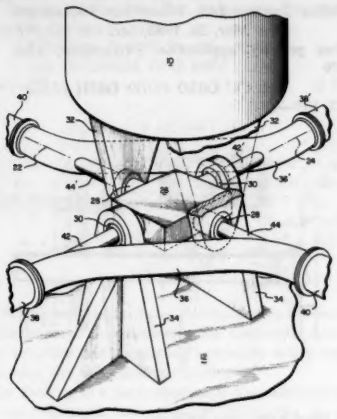
EXTERNAL FLOWLINE ACROSS A UNIVERSAL JOINT

Douglas W. DeGraaf, Downers Grove, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Jun. 16, 1980, Ser. No. 160,003
Int. Cl.³ B63B *21/00*
U.S. Cl. 137—615 **9 Claims**

1. Apparatus by which a fluid can be transported through a conduit from a first body to a second body joined together by a universal joint comprising:
said first body and said second body being joined together by neons defining said universal joint having two definable axes of rotation,
first and second fluid swivels positioned about 90° from each other and with each swivel located exterior of and axially in line with a respective axis of the universal joint,
an elbow conduit exterior of the universal joint having its ends connected to the two swivels,

a first conduit extending out from the first swivel and secured to the first body, and



a second conduit extending out from the second swivel and secured to the second body.

4,318,424

THREE PORT TWO-WAY DIVERTER VALVE WITH INTEGRAL DRAIN ON ONE OUTPUT PORT

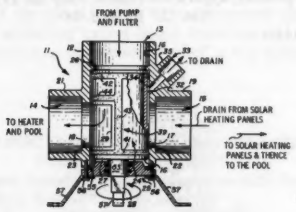
Peter Bajka, 725 Casita Way, Los Altos, Calif. 94022

Continuation of Ser. No. 852,862, Nov. 18, 1977, Pat. No. 4,169,491. This application Sep. 14, 1979, Ser. No. 75,420

The portion of the term of this patent subsequent to Oct. 2, 1996, has been disclaimed.

Int. Cl.³ F16K *11/085*

U.S. Cl. 137—625.21 **5 Claims**


FROM PUMP AND FILTER
TO DRAIN
DRAIN FROM SOLAR HEATING PANELS
TO HEATER AND POOL
TO SOLAR HEATING PANELS & THENCE TO THE POOL

1. A diverter valve including a valve body having a cavity with first, second and third openings communicating with said cavity, and a valve member having passageway means extending therethrough between an open end and a side opening, said valve member being mounted for movement inside said cavity between a position in which said side opening is aligned with said second opening when said end opening is aligned with said first opening and a position in which said side opening is aligned with said third opening when said end opening is aligned with said first opening for flow of fluid from said first opening to a selected one of said second opening and said third opening, wherein the improvement in said diverter valve comprises:

said valve body being formed with a fourth opening communicating with said cavity; and

said valve member being formed to provide a drain passageway extending for fluid flow from said third opening to said fourth opening when said side opening is aligned with said second opening, and said valve member being provided with sealing means positioned to seal said fourth opening when said side opening is aligned with said third opening.

4,318,425

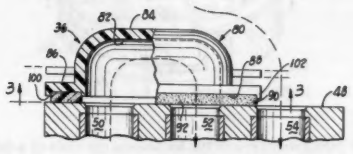
REFRIGERANT FLOW REVERSING VALVE

Robert T. Marks, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio

Filed Oct. 26, 1979, Ser. No. 88,567

Int. Cl.³ F16K *11/07*

U.S. Cl. 137—625.43 **13 Claims**



12. A refrigerant flow reversing valve comprising:

(a) a valve housing defining a chamber for communicating with a refrigerant compressor;

(b) a first refrigerant port communicating the chamber with a compressor discharge;

(c) a bearing face supported in said chamber spaced from said first port;

(d) second, third and fourth ports opening into said chamber through said bearing face, said second port communicable with the compressor intake;

(e) a valving member slidably disposed on said bearing face for movement between a first position wherein said second and third ports are communicated with each other via said valving member and said first and fourth ports are communicated with each other and a second position wherein said second and fourth ports are communicated with each other via said valving member and said first and third ports are communicated with each other; and

(f) actuator means for moving said valving member between said first and second positions;

(g) said valving member comprising:

(i) a rigid plastic body defining an elongated face extending peripherally about said valve body confronting said bearing face and extending generally parallel to said bearing face;

(ii) a smoothly contoured cavity opening into said valve body face, the opening of said cavity in said face having a width which is at least as great as the maximum diametrical extend of the largest of said second, third and fourth ports and having a length sufficient to fully communicate said second and third ports and said second and fourth ports, said valve body defining a lip extending about the opening of said cavity and projecting from said valve body face toward said bearing surface;

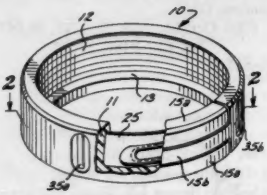
(iii) a thin sheet of polytetrafluoroethylene interposed between said face and said bearing surface and defining an inner periphery extending about the opening of said cavity in said face and engaging said lip, said sheet having one side engaged with said valve body face and its opposite side in low friction sealing engagement with said bearing surface; and

(iv) means mechanically interlocking said valve body face and said one side of said sheet, said interlocking means including microscopic nodules formed across said one side of said sheet.

4,318,426
PIPE THREAD PROTECTOR

Robert F. Callanan, 2359 Chestnut Ave., Long Beach, Calif. 90806, and Michael D. Soutsos, 5475 Colorado St., Long Beach, Calif. 90814

Continuation-in-part of Ser. No. 127,941, Mar. 7, 1980, abandoned. This application May 27, 1980, Ser. No. 153,588
Int. Cl.³ B65D *59/00*
U.S. Cl. 138—96 T 6 Claims

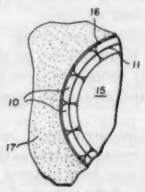


1. A pipe thread protector for use on the ends of a drill pipe, comprising:
   a tubular spring split along one side by a convolved separation to form a plurality of interlacing fingers, said spring being prestressed to urge said fingers into an overlapping alignment;
   a resilient covering formed to surround said tubular spring and including a plurality of conformingly interlacing projections on the exterior of said fingers to urge the separation thereof, said covering defining an interior opening provided with a thread engaging surface; and
   a first and second handle formed in said covering adjacent said separation for manipulation thereof.

4,318,427
THERMAL INSULATION SYSTEM

Roger H. Cross, Jr., 927 Erie Station Rd., Rush, N.Y. 14543

Filed Oct. 31, 1980, Ser. No. 202,702
Int. Cl.³ B32B *1/08;* D03D *49/26*
U.S. Cl. 138—149 2 Claims

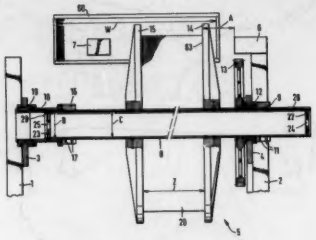


1. A thermal insulation system comprising:
   a. a plurality of tough, generally tubular, resin bags;
   b. loose, particulate insulation material packaged in each of said bags;
   c. ends of said bags being sealed closed to contain said insulation material;
   d. said bags being placed around a body to be insulated;
   e. said insulation material being arranged in an even thermal barrier within said bags where it is contained and protected during use; and
   f. said bags being formed as elongated tubes sealed at both ends and substantially filled with said insulation material, said body being a pipe, and said bags being arranged end to end to said pipe extends axially through the insides of said bags.

4,318,428
WARP BEAM

Everhard Seifert, Rickenbach, Fed. Rep. of Germany, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Mar. 24, 1980, Ser. No. 133,592
Claims priority, application Switzerland, Mar. 28, 1979, 2872/79
Int. Cl.³ D03D *49/00;* D02H *13/32*
U.S. Cl. 139—97 12 Claims

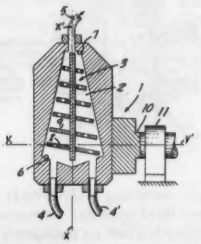


1. A warp beam comprising
   an elongated tube;
   a pair of flanges mounted on said tube to form lateral boundaries for a plurality of warp windings; and
   at least one tubular extension mounted onto and over one end of said tube.

4,318,429
INSTALLATION FOR PREPARING A LIQUID OR PASTY MIXTURE INTENDED TO BE MOLDED AND METHOD FOR THE USE OF SAID INSTALLATION

Jacques Gouttebessis, Volvic, and Michel Martel, Clermont-Ferrand, both of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed May 23, 1980, Ser. No. 152,723
Claims priority, application France, May 23, 1979, 79 13427
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—1 3 Claims

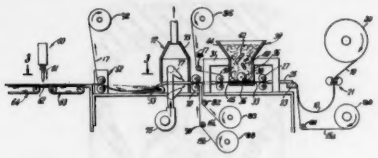


1. An installation for manufacturing articles from one or more liquid or pasty materials which solidify in a mold, said material or materials resulting from the mixing, prior to its or their introduction into the mold, of at least two liquid and/or pasty components in a mixer comprising a chamber, a mixing device arranged in the chamber, at least two feed conduits for the components arranged at one end of the chamber, each feed conduit feeding a different component to the chamber, and a discharge conduit for the mixture arranged at the other end of the chamber, characterized by the fact that the mixer is provided with an axis of rotation which is perpendicular to the average direction of flow of the mixture which passes through the chamber and with a control which makes it possible to reverse the direction of flow of the mixture with respect to the gravitational field of the earth.

4,318,430
APPARATUS FOR MAKING RECHARGEABLE ELECTRODES FOR ELECTROCHEMICAL CELLS

Gifford T. Perman, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed Nov. 7, 1979, Ser. No. 91,994
Int. Cl.[3] H01M 7/00; B05C 11/00
U.S. Cl. 141—32 13 Claims



1. Apparatus for the manufacture of electrodes for rechargeable electrochemical cells, wherein the electrodes include a metal grid substrate and an electrochemically active material carried thereby, the apparatus comprising:

means for feeding to a paste applicator a continuous web of metal grid substrate having spaces therein for the reception of the electrochemically active material;

grid substrate sizing means upstream of the paste applicator means for sizing the thickness of said grid to a predetermined value prior to the application of paste thereto, said thickness value being less than the thickness of the grid upstream of the sizing means;

paste applicator means for loading the spaces of the sized metal grid with a paste comprising the electrochemically active material, said applicator including a paste transfer drum rotating about an axis extending transversely of the grid and parallel to the plane thereof, said drum receiving the paste and having a predetermined speed and spacing relative to the grid so as to distribute the desired amount of paste onto said grid;

driven sizing roller means receiving the paste-filled continuous substrate grid for compressing the paste material in the spaces of the metal grid to a predetermined dimension, and for extracting excess liquid contained in said paste while increasing the density thereof in the spaces of the grid.

4,318,431
ELECTRONIC CONTROL SYSTEM FOR A POUCH PACKAGING MACHINE

Susan D. Evans, Stamford, Conn., assignor to RJR Foods, Inc., San Francisco, Calif.

Filed Dec. 8, 1980, Ser. No. 214,388
Int. Cl.[3] B65B 3/04
U.S. Cl. 141—90 17 Claims

1. A filler control apparatus for controlling the sequence of operation of a filling apparatus having product means for receiving and expelling the material to be dispensed, dispensing means for depositing the material, valve means selectively connecting said product means with a material source when said valve is in a fill position, or with said dispensing means when said valve is in a dispensing position, and actuating means responsive to electrical signals for controlling said product means, said dispensing means and said valve means, the control apparatus comprising:

a first timing means responsive to an initiating electrical signal for providing a first electrical signal at the end of a first predetermined time period following receipt of said initiating electrical signal;

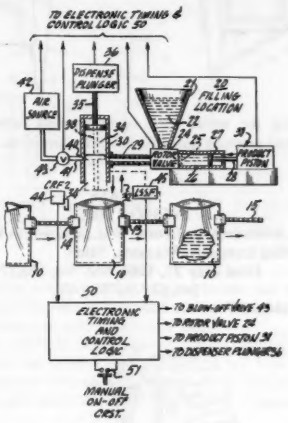
first circuit means for supplying said first electrical signal to said actuating means to cause said product means to move to its receiving position;

a second timing means responsive to said first electrical signal for providing a second electrical signal at the end of a second predetermined time period following receipt of said first electrical signal;

second circuit means for supplying said second electrical signal to said actuating means to cause said valve means to move to its dispensing position;

trigger circuit means responsive to said second electrical signal and to an externally controlled switching means for providing a triggering electrical signal to cause said dispensing means to open to a receiving position;

a third timing means responsive to said triggering electrical signal for providing a third electrical signal at the end of a third predetermined time period following receipt of said triggering electrical signal;



third circuit means for supplying said third electrical signal to said actuating means to cause said product means to expel the material;

a fourth timing means responsive to said third electrical signal for providing a fourth electrical signal and for providing a reset electrical signal to reset said first, second, third and fourth timing means at the end of a fourth predetermined time period following receipt of said third electrical signal; and

fourth circuit means for supplying said fourth electrical signal to said actuating means to cause said dispensing means to assume a non-receiving position and to cause said valve means to assume said fill position and to said first timing means as said initiating signal.

4,318,432
WORKBENCH TOOL ASSEMBLY

Thomas L. Howey, 1678 Hooker Oak Ave., Chico, Calif. 95926

Filed May 30, 1980, Ser. No. 154,814
Int. Cl.[3] B27C 9/04
U.S. Cl. 144—1 C 9 Claims

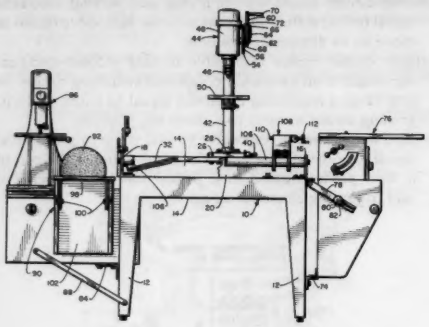
1. A workbench tool assembly comprising:

a frame having a front and a back and a right side and a left side forming a top surface, said frame being adapted to be located on a planar supportive surface;

a drill press assembly mounted on said top surface, said drill press assembly being pivotable between a retracted position and an extended position, said extended position being when said drill press assembly extends outwardly from said top surface, said retracted position being when said drill press assembly is located entirely along said top surface, said extended position being approximately ninety degrees displaced from said retracted position; and

counterbalance means connected between said frame and said drill press assembly, said counterbalance means lo-

cated entirely below said top surface, said counter-balance means substantially balancing said drill press assembly



during the entire path of movement between said retracted position and said extended position.

4,318,433

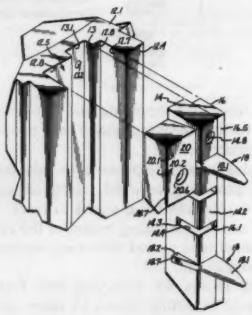
INCISOR ROLL

Ralph D. Amundsen, La Crosse, Wis., assignor to Webster Wood Preserving Company, Wayzata, Minn.

Filed May 27, 1980, Ser. No. 153,179

Int. Cl.³ B27E *9/04*

U.S. Cl. 144—2 J **8 Claims**



1. An incisor roll for incising a workpiece and comprising

a cylinder rotatable about its axis and having a cylindrical outer surface provided with slots extending generally parallel to its axis, and socket means within each slot defining a row of spaced sockets extending longitudinally of each sot for the receptiion of incisor teeth;

a plurality of incisor teeth received in the sockets, each tooth having a base portion seated within a socket and a blade portion protruding outwardly of the cylindrical outer surface, the base portion of each tooth having a bearing surface, and the sockets being free of obstacles preventing removal of teeth individually therefrom; and

locking means for firmly seating and locking the teeth within the sockets, the locking means including a plurality of elongated locking bars removeably attached to the cylinder and each extending along a row of teeth, each locking bar having a camming surface engaging the teeth in its respective row and urging the teeth into their respective sockets;

whereby removal of the locking means permits any tooth base portion of the plurality of teeth engaged by the camming surface to be individually removed and replaced without disturbing the remaining teeth.

4,318,434

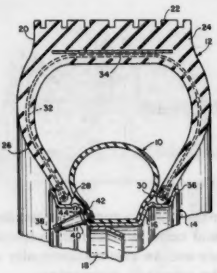
BANDED TIRE LOAD ENHANCEMENT SYSTEM

Edward G. Markow, Oakdale, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed May 1, 1980, Ser. No. 145,857

Int. Cl.³ B60C *17/00, 5/00, 9/00*

U.S. Cl. 152—156 **3 Claims**



1. A self-energized tire load enhancement means for a banded radial run-flat tire system comprising in combination:

a wheel having a hub, a drop-center rim, and a wheel body joining said hub to said rim, said hub accommodating an axle for mounting said wheel on a vehicle;

a resilient, pneumatic banded radial run-flat tire having a casing with a crown, sidewalls extending from said crown on either side to annular bead portions mounting said tire in a sealed relationship on said wheel rim, a resilient annular band element in said tire crown, said band element being stabilized by a multiplicity of closely-spaced substantially spoke-like radial reinforcing elements in said tire sidewalls;

tire inflation means in said wheel rim for the inflation of said tire; and

a torodial resilient expandable inner tube located within said casing of said tire, said tube being diametrically undersized with respect to the size of the inner tube normally fitted on said wheel, tube inflation means in said wheel rim for the inflation of said tube, the inflation pressure of said tube being less than a quarter of the inflation pressure of said tire, the tire being inflated to a pressure that in normal operation compresses said tube into the annular region of said tire adjacent said rim substantially clear of the interior walls of said casing whereby, when said tire loses inflation pressure, the release of said tire pressure acting on said tube causes it to expand outwardly against said sidewalls to impart a curvature to the reinforcing elements therein at least about 45° on either side of the centerline of the footprint in contact with the surface to thereby enhance the fatigue characteristics of said band and the load capacity of said deflated tire.

4,318,435

STRUCTURE FOR USE WITH A PNEUMATIC TIRE PROVIDING SUPPORT IN THE EVENT OF DEFLATION

Roy A. Heath-Coleman, 4 Brookfield, Sandhurst, Kent, England

PCT No. PCT/GB79/00026, § 371 Date Oct. 10, 1979, § 102(e) Date Oct. 4, 1979, PCT Pub. No. WO79/00612, PCT Pub. Date Sep. 6, 1979

PCT Filed Feb. 8, 1979, Ser. No. 165,126

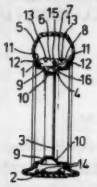
Claims priority, application United Kingdom, Feb. 10, 1978, 5474/78

Int. Cl.³ B60C *17/04*

U.S. Cl. 152—158 **13 Claims**

1. A structure for location around the periphery of a wheel rim including a well and within a tire fitted thereto the structure providing support for the load bearing part of the tire in

the event of deflation, characterised by a plurality of resilient block members locatable within the rim and extending transversely across the well with the ends adjacent respective ones of the tire beads when seated normally in the rim, the block members being spaced around the rim and flexibly interconnected by linking means to form a structure of annular form securable around the rim wherein the linking means provides a



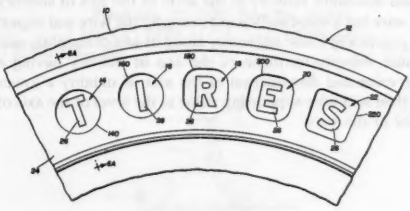
surface raised above the block members at locations between two adjacent block members, some, at least, of adjacent block members being formed of two parts hingedly interconnected by a pivot axis lying parallel to a tangent to the rim whereby the parts may be angularly displaced about the hinge connection and lifted at the centre to move away from the rim and tire beads to enable the tire bead to enter the well of the rim during fitting.

4,318,436

TIRE SIDEWALL ADDITION MEMBERS THAT UNDERGO PERCEPTIBLE CHANGE DURING ABNORMAL OPERATION

Louis W. Shurman, Canton, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 19, 1980, Ser. No. 179,596
Int. Cl.³ B60C *13/00*
U.S. Cl. 152—353 R **8 Claims**



1. In the combination of a pneumatic tire with a detachable and circumferentially discontinuous tire sidewall addition member, having a visually exposed portion that is visible at all times, wherein said tire has a circumferentially discontinuous first coupling means portion adapted to operatively interact with a second circumferentially continuous coupling means portion on said sidewall addition member for securing said member to said tire sidewall wherein the improvement comprises one of said addition member and coupling means portions including means for producing a perceptive physical change during abnormal operating conditions of said tire.

4,318,437

METAL CASTING SYSTEM

Willard E. Kemp, 1035 Dairy Ashford Rd., Suite 146, Houston, Tex. 77079

Filed Aug. 29, 1980, Ser. No. 182,429
Int. Cl.³ B22C *15/22*
U.S. Cl. 164—7.2 **40 Claims**

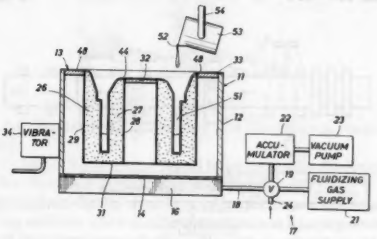
1. A process for the manufacture of a cylindrical metal casting using a pattern having the shape of the casting comprising:

(a) providing a pattern of a porous rigid material having the shape of the desired casting,

(b) forming a tubular sleeve of tight-fitting, thermally degradable film of relative thinness so as to be non-self-supporting about and enclosing all the surfaces of the pattern except one end of the pattern being exposed by an opening in said surrounding film and subject to a source of subatmospheric pressure,

(c) inserting the film surrounded pattern into a fluidized particulate bed and terminating fluidization of said particulate bed while yet subjecting said patterns to subatmospheric pressure with said film surrounded pattern standing upright therein,

(d) tightly packing said particulate bed about the film-surrounded pattern which stands upright therein and only the exposed end of the film surrounded pattern being accessible in the top surface of said particulate bed,



(e) providing a reduced fluid pressure within said particulate bed relative to the pattern and its exposed end now subject to the atmosphere whereby said surrounding film is tightly held against said particulate bed and slightly released from the pattern,

(f) removing manually the pattern upwardly by its exposed end from the surrounding film and leaving therein a cavity with an open top bounded by the film with the shape of the desired casting, and

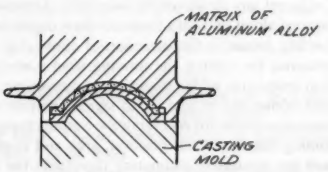
(g) filling through the open top of the cavity defined by the film with molten metal for forming the casting simultaneously with thermal degration of the film.

4,318,438

METHOD FOR CASTING A FIBER-REINFORCED COMPOSITE ARTICLE

Keisuke Ban, Fujimi, and Takeo Arai, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1977, Ser. No. 837,148
Int. Cl.³ B22D *18/02, 19/14*
U.S. Cl. 164—97 **14 Claims**



1. A method of casting a molten matrix around a chill member comprising: forming a shaped body of an inorganic fiber material having a bulk density in the range of 0.05 to 1.0 g/cc; fixedly securing said shaped body to the entire surface of a chill member; placing said chill member along with said shaped body in a casting mold; pouring molten matrix material around said chill member in said mold; causing said molten matrix material to penetrate into and combine with said shaped body

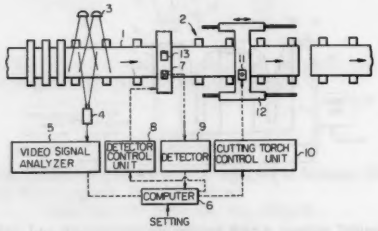
by high pressure solidification casting to form an intermediate fiber-reinforced composite layer through which said chill member and said matrix material are integrally and closely bonded with each other.

4,318,439

HOT STEEL CUTTING APPARATUS

Tatsuo Hiroshima, Nishinomiya; Takahide Sakamoto; Kenichi Matsui, both of Mino, and Ichiroh Ohgaki, Suita, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Aug. 2, 1979, Ser. No. 63,340
Claims priority, application Japan, Nov. 29, 1978, 53-147539
Int. Cl.³ B22D *31/00*
U.S. Cl. 164—154 **2 Claims**



1. An apparatus comprising means for producing a continuous length of hot steel material and means for cutting said hot steel material into slabs, said cutting means having:

means for conveying along a conveying path a continuous length of hot steel material having a surface which may have flaws therein at a particular positions and with a size coplanar with said surface and with a depth;

lamps directed toward said surface of the hot steel material for lighting an area of the surface of the hot steel material;

an industrial television camera directed toward the lighted area of the steel material for televising the lighted area and outputting a video signal representing the image of the area;

a video signal analyzer connected to said camera for analyzing the video signal from said camera and determining therefrom the position and the size of a flaw in the surface of the steel material;

a flaw depth detector and scarfing means spaced along said conveying path from said lamps in the direction of conveying of the steel material and having an inspection probe for detecting the depth of the detected flaw and further having scarfing means for scarfing the surface of the steel material which has been televised with a scarfing torch adjacent any flaws which have been detected;

a cutter spaced along said path from said flaw depth detector and scarfing means in the direction of conveying of the steel material for cutting the moving steel material in a direction transverse to the direction of conveying; and

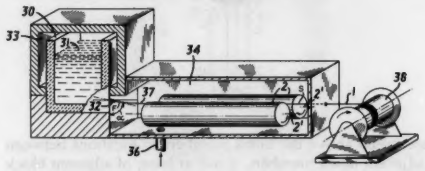
a computer connected to said video signal analyzer and to said inspection probe for receiving the outputs thereof and determining therefrom the position, area and depth of a flaw and for accurately estimating therefrom the loss of length of steel material due to such a flaw during subsequent conditioning of the steel material and adding the thus estimated length to a predetermined length of steel material to form a desired length needed to make a desired product and outputting a timing signal, said computer being connected to said cutter for supplying said timing signal to said cutter to cause said cutter to cut the desired length of said steel material.

4,318,440

PROCESS AND INSTALLATION FOR THE MANUFACTURE OF A METAL WIRE FROM A JET OF MOLTEN METAL

Andre Reiniche, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Jul. 30, 1980, Ser. No. 173,866
Claims priority, application France, Aug. 1, 1979, 79 19927
Int. Cl.³ B22D *11/124*
U.S. Cl. 164—462 **5 Claims**



1. A process for manufacturing a metal or metallic alloy wire by projecting a jet of molten metal or metallic alloy through a die into a cooling enclosure containing a cooling fluid in which the jet solidifies into a wire along an axis of stability, the cooling fluid being imparted, at least until the solidification of the jet, a movement which is directed perpendicularly towards the jet, characterized by the fact that the axis of the die forms an angle of between 45° and 90° with the descendant vertical and is contained within the same vertical plane as the axis of stability of the wire, and by the fact that in a plane cross section perpendicular to the axis of stability of the wire the velocity of the cooling fluid is distributed symmetrically with respect to the vertical plane so as to reach a minimum in the vertical plane and to have a component parallel to the minimum velocity which increases on both sides of the vertical plane, said cooling fluid velocity also being distributed in such a manner that said minimum velocity at the level of the axis of stability of the wire has a value sufficient to support the wire and impart to it a practically linear trajectory along its axis of stability, said minimum velocity upstream of the axis of stability having a higher value and downstream of the axis of stability a lower value than said wire-supporting value at the level of the axis of stability of the wire.

4,318,441

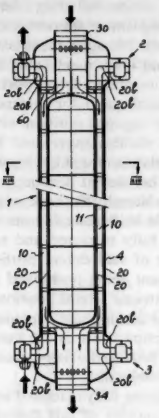
COUNTERFLOW HEAT EXCHANGER

Riccardo Belleli, Mantova, Italy, assignor to Belleli Industrie Meccaniche S.p.A., Mantova, Italy

Filed May 14, 1979, Ser. No. 39,005
Claims priority, application Italy, May 19, 1978, 23619 A/78; May 19, 1978, 23620 A/78
Int. Cl.³ F28F *9/02*
U.S. Cl. 165—81 **26 Claims**

1. A counterflow heat exchanger having two fixed tube plates, characterized in that it comprises an upper tube plate and a lower plate, said tube plates being coaxial with each other, between said upper and lower tube plates there extending a tube nest including a plurality of tubes laid parallel to the exchanger axis, said tubes of said plurality being connected to said tube plates and substantially distributed in a polar symmetry arrangement and having the terminating portion of at least one end substantially perpendicular to the exchanger axis, the rectilinear portion of said tube nest, substantially constituting

the heat exchange zone, being enclosed with substantially uniform distribution within an annular interspace defined between an inner jacket and an outer shroud affixed to said tube plates.

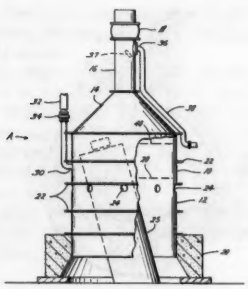


4,318,442

METHOD AND APPARATUS FOR CONTROLLING AN UNDERWATER WELL BLOWOUT

Peter A. Lunde, and Preston S. Phillips, both of Houston, Tex., assignors to Ocean Resources Engineering, Inc., Houston, Tex.

Filed Sep. 27, 1979, Ser. No. 79,546
Int. Cl.³ E02B *15/04, 1/00;* B03D *1/00*
U.S. Cl. 166—357 **2 Claims**



1. An underwater well blowout container comprising a hollow body,

a weighted collar surrounding the lower end of said body,

a frusto-conical top secured to the upper end of said body,

a chimney extending above the upper end of said top,

a valve in said chimney for opening and closing flow through said chimney,

a plurality of openings in the lower portion of said body,

a gas discharge line connected into said chimney and extending downwardly to a level below said chimney, and

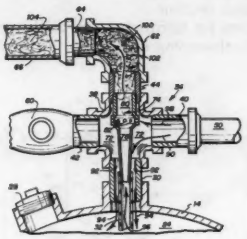
an oil discharge connected into said body at a level above said openings and below the lowest level of said gas discharge line.

4,318,443

FOAM GENERATING FIRE FIGHTING DEVICE

Mark A. Cummins, 305 Delmas, Lufkin, Tex. 75091

Continuation of Ser. No. 933,595, Aug. 14, 1978, abandoned. This application Aug. 27, 1980, Ser. No. 181,716
Int. Cl.³ A62C *35/00*
U.S. Cl. 169—15 **9 Claims**



1. An apparatus for generating and discharging foam comprising:

a container for storing a liquid foam generating solution and for receiving a gaseous propellant;

a propellant supply chamber connected to and communicating with the interior of said container at a location exterior of the container and above the surface of said liquid foam generating solution;

propellant supply means for storing said gaseous propellant attached to and communicating with said propellant supply chamber for pressurizing said propellant supply chamber and said container;

an aeration chamber having a plurality of apertures therein and attached to said propellant supply chamber, such that said aeration chamber communicates with said propellant supply chamber through said plurality of apertures to receive said gaseous propellant;

ejector means having a receiving end and a discharging end, said ejector means being disposed such that said receiving end of said ejector means contacts said liquid foam generating solution within said container, said discharging end of said ejector means being attached to said aeration chamber, such that said ejector means forms a fluid tight passageway for transporting said liquid foam generating solution to said aeration chamber, wherein said gaseous propellant entering said aeration chamber through said plurality of apertures aerates and agitates said liquid foam generating solution to produce an aerated liquid foam generating solution; and

a discharge tube having a receiving end and a discharging end, said receiving end of said discharge tube connected to said aeration chamber to receive said aerated liquid foam generating solution, wherein said discharge tube transports and further agitates said aerated liquid foam generating solution to thereby produce foam at said discharging end of said discharge tube.

4,318,444

TELESCOPING HINGE MEMBER ON REARWARDLY FOLDING TOOL BAR

Kenneth Hake, Tipton, Kans., assignor to Kent Manufacturing Co., Inc., Tipton, Kans.

Filed May 2, 1980, Ser. No. 146,191
Int. Cl.³ A01B *73/00*
U.S. Cl. 172—456 **19 Claims**

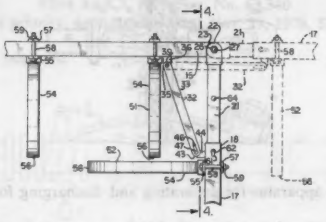
1. A mechanism for horizontally pivotally connecting sections of a foldable agricultural tool bar, said mechanism comprising:

(a) a first elongated section having a proximate end and a longitudinal axis, said first section having at least one ground-working tool mounted thereon;

(b) a second elongated section having a proximate end associated with the proximate end of said first elongated section and a longitudinal axis, said second section having at least one ground-working tool mounted thereon;

(c) a telescoping member having a slide portion and an end portion, said slide portion being slidably engaged with the proximate end of said first section so as to telescope with respect to said first section, said end portion being spaced from said slide portion;

(d) hinge means for horizontally pivotally connecting the end of said telescoping member to the proximate end of



said second section, said hinge means being in spaced relationship to the proximate end of said first section, whereby said telescoping member is allowed to simultaneously telescope with respect to said first section and pivot horizontally with respect to said second section;

(e) said first section and said telescoping member being aligned such that said member telescopes substantially parallel to the longitudinal axis of said first section; and

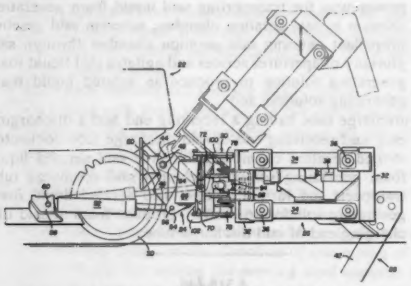
(f) linking means connected to said first and second sections and limiting the telescoping movement of the telescoping member with respect to said first section.

4,318,445

SIDE SHIFT PLOW ASSEMBLY

Paul R. Schuck, Davenport, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Aug. 18, 1980, Ser. No. 179,329
Int. Cl.³ E02F *3/85*
U.S. Cl. 172—477 **5 Claims**



1. A side shift assembly for a ground working implement mounted on a prime mover comprising:

a frame assembly mounted on said prime mover having laterally extending slide rails;

an implement support bracket mounting said ground working implement on said slide rails for lateral movement relative to said prime mover;

a slide plate slidably mounted between said slide rails for lateral movement relative to said slide rails;

an extensible and retractable fluid operated piston-cylinder operably connected at one end to said frame assembly and at its other end to said slide plate;

releasable latching means mounted on said implement support bracket for selectively connecting said slide plate to said implement support bracket, said slide plate having spaced apart detent portions along one edge thereof, said releasable latching means including a latch pawl rotatably mounted on said implement support bracket for selective rotation into and out of engagement with said slide plate detent portions, said latch pawl being spring biased into engagement with one of said detent portions, and a handle attached to said latch pawl for manually releasing said latch pawl from an engaged position with said one detent portion to permit slidable movement between said one edge of said slide plate and said latch pawl until said latch pawl engages another detent portion;

said implement being laterally shiftable relative to said prime mover by said side shift assembly such that when said piston-cylinder is fully retracted and said latch pawl is engaged with one of said detent portions on said slide plate, said implement being positioned on said frame assembly at a first extreme lateral position and actuation of said piston-cylinder causing said implement to move laterally in a first direction towards the center of said frame assembly and then back to the first extreme lateral position on said frame assembly; and

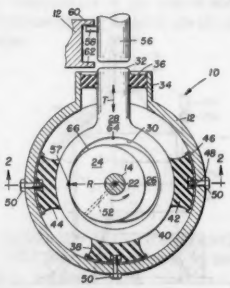
said piston-cylinder being fully extended and said latch pawl being engaged in another of said detent portions of said slide plate whereby said implement being positioned at a second opposite extreme lateral position on said frame assembly and actuation of said piston-cylinder causing said implement to move laterally in a direction opposite to said first direction towards said center and then back to the second opposite extreme lateral position on said frame assembly.

4,318,446

LINEAR MOTION IMPACTOR DEVICE

Richard E. Livesay, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 10, 1978, Ser. No. 949,588
Int. Cl.³ B25D *11/10*
U.S. Cl. 173—13 **3 Claims**



1. An impact tool comprising:

a housing **(12)**,

a shaft **(14)** mounted for rotation in said housing **(12)**, said shaft **(14)** defining an axis of rotation **(22)**, said shaft further having an eccentric cam **(24)** thereon defining a predetermined fixed radius (R), said throw radius (R) being coaxial with said axis of rotation **(22)**;

an impactor **(28)** defining a circular bore **(30)** therein having a diameter at least equal to twice said predetermined throw radius (R), said impactor **(28)** including an extension **(32)** extending outwardly of the housing;

means **(20)** for rotating said shaft;

a resilient case seal **(36)** associating the extension with the housing and a compression pad **(38)** substantially opposite the extension **(32)** interposed between the impactor **(28)**

and the housing (12) so that the case seal (36) and the compression pad (38) resiliently bias said impactor (28) about the eccentric cam (24); and

at least two elastomeric shear pads (42,44), each interposed between the impactor (28) and the housing (12), each shear pad (42,44) positioned on generally opposite sides of said impactor (28).

4,318,447

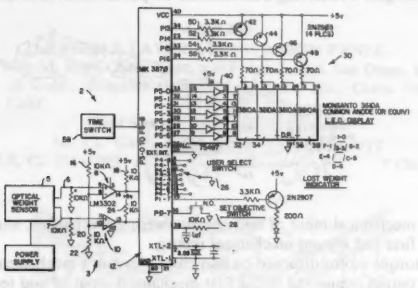
DIET SCALE WITH WEIGHT PROGRESS INDICATOR

Michael E. Northcutt, 470 E. Calaversa, Milpitas, Calif. 95035

Filed Dec. 18, 1979, Ser. No. 104,764

Int. Cl.³ G01G *19/44*

U.S. Cl. 177—25 **29 Claims**



1. A diet scale having a weight progress indicator for indicating progress in a diet program comprising:

weight measuring means for measuring the current weight of the dieter;

memory means for storing an objective weight for the dieter and the time interval of the diet program;

objective weight entry means coupled to said memory means for entering the objective weight in said memory means;

objective time entry means coupled to said memory means for entering the time interval of the diet program in said memory means;

processing means coupled to said memory means and responsive to the current weight for determining the projected weight of the diet program and the difference between the projected weight and the current weight, the projected weight being the calculated weight of the dieter as a function of the elapsed time and objective weight of the diet program; and

display means connected to said processing means for displaying the difference between the projected weight and the current weight.

4,318,448

LAND TOWING VEHICLE FOR SMALL AIRCRAFT

Jack M. Cline, P.O. Box 160, Clarksville, Ark. 72830

Filed Apr. 11, 1978, Ser. No. 895,456

Int. Cl.³ B60P *3/06*

U.S. Cl. 180—14 C **5 Claims**

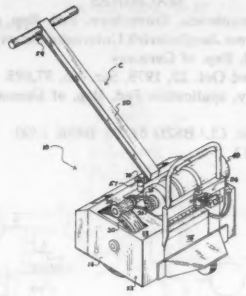
1. A land towing vehicle for aircraft comprising:

(a) a frame having a plurality of ground engaging wheels mounted thereon;

(b) a motor mounted on said frame;

(c) control means hingedly mounted to said frame for guiding said towing vehicle and selectively connecting said motor to said ground wheels for shifting from a first freewheeling mode to a second power driven mode;

(d) biasing means associated with said control means for normally biasing said control means in said first freewheeling mode;



(d) means attached to said frame for releasably connecting a standard tow bar as supplied with the aircraft.

4,318,449

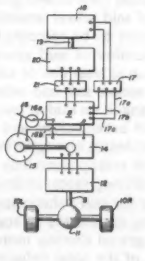
ELECTRIC DRIVE PROPULSION SYSTEM FOR VEHICLES

Winfield W. Salisbury, 5715 E. Cambridge, Scottsdale, Ariz. 85257

Continuation of Ser. No. 846,929, Dec. 12, 1977, abandoned. This application Nov. 9, 1978, Ser. No. 959,330

Int. Cl.³ B60K *1/00*

U.S. Cl. 180—65 R **11 Claims**



1. In an electric drive propulsion system for vehicles, said system including:

a variable speed main drive motor;

a power reservoir battery to energize the drive motor for powering the vehicle;

a battery charging system comprised of means including a charging engine operable independently of the drive motor for electrically charging the battery and control means responsive to the charge state of the battery to energize the charging engine intermittently for operation at substantially optimum efficiency conditions;

a commutator connected between the battery and the drive motor for receiving electrical power from said battery and producing a variable frequency alternating current for powering said drive motor; and

means independent of said drive motor for rotating said commutator, the rate of rotation of said commutator determining the frequency of said alternating current provided to said drive motor.

4,318,450
CHASSIS DRIVE ARRANGEMENTS FOR ELECTRICALLY DRIVEN MOBILE WORKING MACHINES

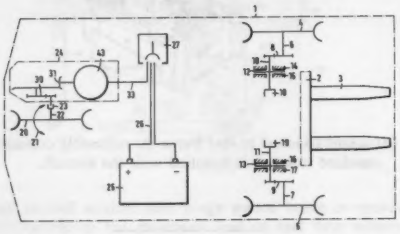
Karl-Heinz Griesenbrock, Stuvenborn, Fed. Rep. of Germany, assignor to Firma Jungheinrich Unternehmensverwaltung KG, Hamburg, Fed. Rep. of Germany

Filed Oct. 23, 1979, Ser. No. 87,693

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1978, 2847033

Int. Cl.³ B62D *61/06*; B60K *1/00*

U.S. Cl. 180—212 **1 Claim**



1. A chassis drive arrangement particularly for electrically driven mobile machines including a chassis having a front end and a rear end comprising: wheel assemblies located respectively at said front end and said rear end each including wheel means, one of said wheel assemblies including at least one steerable wheel and the other of said wheel assemblies including at least one non-steerable wheel; geared driving motor means including at least one geared driving motor; control means for operating said geared driving motor means; a pivotally mounted bogie having at least one steerable wheel arranged thereon; coupling means associated with each of said wheel assemblies adapted to enable selective connection and disconnection of individual ones of said geared driving motors with individual ones of said wheel assemblies to enable said chassis drive arrangement to be selectively connected to be driven by a selected number of said geared driving motors; brake means arranged on at least one of said wheel assemblies between said coupling means and said wheel means; and gear transmission means arranged on said at least one of said wheel assemblies between said brake means and said wheel means; said drive arrangement being arranged such that when one geared driving motor is arranged at only one of said wheel assemblies said geared driving motor is designed to deliver the entire propulsive power for said vehicle and such that when at least two geared driving motors are arranged at two or more wheel assemblies said geared driving motors are designed to each deliver a portion of the total vehicle propulsive power and to jointly deliver the total vehicle propulsive power.

4,318,451
DUAL FUNCTION REMOTE STEERING CONTROL

Richard K. Liggett, Dennison, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed May 27, 1980, Ser. No. 153,400

Int. Cl.³ B62D *5/08*

U.S. Cl. 180—324 **9 Claims**

1. A material handling vehicle comprising:

a power driven chassis having a main cab;

front wheels on said chassis which are positionable to steer said driven chassis;

an upperstructure supported by said chassis and being movable relative thereto having an operator cab;

a center pin connecting said chassis and said upperstructure;

an upper hydraulic power supply disposed on said upperstructure providing an output of pressurized hydraulic fluid;

a flow divider connected to the output of said upper hydraulic power supply to divide the output thereof into a control component output and a power component output;

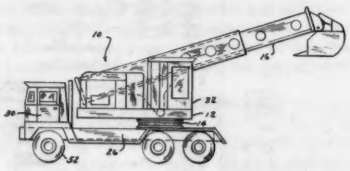
chassis steering means having a mechanical output, connected to said front wheels for steering said chassis, and a hydraulic input, which receives pressurized hydraulic fluid, and a mechanical input which controls the mechanical output for steering said chassis;

a chassis power supply disposed on said chassis providing a second source of pressurized hydraulic fluid;

first connecting means for connecting the power component output of said flow divider through said center pin to the hydraulic input of said chassis steering means;

second connecting means for connecting the hydraulic output of said chassis power supply to the hydraulic input of said chassis steering means;

a tee gear box having a mechanical output, connected to the



mechanical input of said chassis steering mechanism, and first and second mechanical inputs;

a torque motor disposed on said chassis having a mechanical output connected to the first mechanical input of said tee gear box;

a positionable steering device located in the operator cab on said upperstructure;

a steering valve operably connected to said steering device having a hydraulic connection to the control component output of said flow divider and providing an output in response to positioning of said steering device;

third connecting means connecting the output of said steering valve through said center pin to said torque motor for positioning the torque motor in response to positioning of said steering device on said upperstructure; and,

a steering wheel in the main cab on said chassis connected to the second mechanical input of said tee gear box.

4,318,452
NOISE-REDUCED CONSTRUCTIONAL UNIT OF A DEVICE

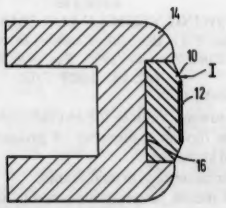
Wilhelm Reitner, Taufkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 25, 1980, Ser. No. 190,723

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1979, 2947111

Int. Cl.³ F16F *7/00*; B41J *29/10*

U.S. Cl. 181—207 **4 Claims**



1. A noiseless printer beam assembly for a mechanical printer comprising a beam wall for mounting in said printer for being engaged by mechanical printing elements of said printer,

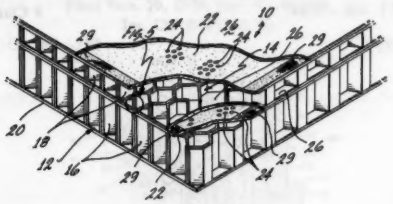
said beam wall being formed with a longitudinal groove running substantially the length of said beam wall, a block of noise dampening material fitted in and filling said groove, and a strip of metal arranged along and isolated on an exterior facing surface of said block, such that side surfaces of said strip are spaced interior of adjacent side edges of said block, for receiving thereagainst the engagement impact of said printer elements, whereby noise vibrations emanating from said strip are suppressed.

4,318,453

DOUBLE LAYER ATTENUATION PANEL

Philip M. Rose, Chula Vista, and Frank J. Riel, San Diego, both of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed Sep. 17, 1979, Ser. No. 76,284
Int. Cl.³ G10K *11/16*; E04B *1/82*; B32B *3/12*
U.S. Cl. 181—292 **7 Claims**



1. A double degree acoustical honeycomb sandwich panel for use in the severe environment in and around high velocity fluid flow paths comprising;

a first and second honeycomb core having a multiplicity of endwise directed cells with walls of thin sheet material disposed transversely to the panel;

an impervious facing of thin sheet material;

a first and second facing of perforated thin sheet material; and

a first and second thin sheet of porous fibrous material;

said impervious facing of thin sheet material is adhesively bonded to one endwise cell face of said first honeycomb core;

said first perforated facing of thin sheet material is adhesively bonded to said first honeycomb core on the surface opposite said impervious facing of thin sheet material;

said first thin sheet of porous fibrous material is adhesively bonded to the other surface of said first perforated facing of thin sheet material;

one endwise cell surface of said second honeycomb core is adhesively bonded to the other surface of said first thin sheet of porous fibrous material;

said second perforated facing of thin sheet material is adhesively bonded to the opposite surface of said second honeycomb core;

said second thin sheet of porous fibrous material is adhesively bonded to the opposite surface of said second perforated facing of thin sheet material;

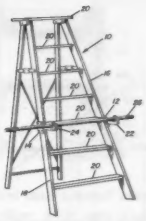
said adhesive material for bonding together said perforated facing of thin sheet material and porous fibrous material forms funnel-like openings between the porous fibrous material and the perforations of said perforated facing of thin sheet material.

4,318,454

FAST ACTING VICE

Robert L. Johnson, P.O. Box 693, Sebree, Ky. 42455

Filed Jun. 9, 1980, Ser. No. 157,476
Int. Cl.³ E06C *5/32*
U.S. Cl. 182—129 **18 Claims**



1. A vice for gripping and holding an object comprising:

a vice housing;

a vice jaw supported in said vice housing and being moveable in and out of said vice housing between an extended and a retracted position, said vice jaw being operable to grip an object;

biasing means for continuously urging said vice jaw toward the retracted position for clamping said vice jaw against an object;

a plurality of jaw teeth formed along one side of the vice jaw; and

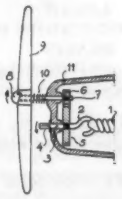
at least one housing tooth formed in said vice housing for engaging said jaw teeth, said jaw teeth and said housing tooth being oriented to prevent movement of said jaw toward the extended position when said jaw teeth and said housing tooth are engaged so that said vice jaw may be pulled out of said vice housing only when the jaw teeth and the housing tooth are disengaged.

4,318,455

FAST-WINDING SPRING MOTOR

Philippe Lapierre, 4, rue Pauly, 75014 Paris, France

Filed Apr. 12, 1979, Ser. No. 29,756
Claims priority, application France, Apr. 14, 1978, 78 11064
Int. Cl.³ F03G *1/04, 1/08*
U.S. Cl. 185—39 **8 Claims**



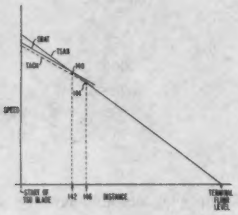
1. A spring motor for toy plane or vehicle with propeller, comprising an energy-storing device constituted by a rubber skein or the like, comprising a driving-shaft situated in extension of the skein and moved by said latter, connected to the propeller by a gear transmission, wherein a device for directly winding the driving skein is provided through the circle swept by the propeller, in the form of a crank or similar type, which can be fitted on the end of the driving-shaft.

4,318,456

TERMINAL SLOWDOWN CONTROL FOR ELEVATOR SYSTEM

James Lowry, Hicksville, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 16, 1980, Ser. No. 150,479
Int. Cl.[3] B66B 5/06
U.S. Cl. 187—29 R 16 Claims



1. An elevator system, comprising:
a structure having a hatchway and a plurality of landings, including terminal landings,
an elevator car mounted for movement in said hatchway,
a plurality of uniformly spaced marker means,
detector means,
said spaced marker means and said detector means being mounted for relative movement in response to movement of the elevator car as it approaches a terminal landing,
first speed pattern means responsive to said detector means, said first speed pattern means providing a terminal slowdown speed pattern signal as a function of car position relative to a terminal floor,
second speed pattern means providing a desired speed pattern signal,
means providing a signal responsive to the actual speed of the elevator car,
control means controlling the speed of the elevator car in response to said desired speed pattern signal and said actual speed signal,
and comparator means responsive to said terminal slowdown speed pattern signal and said desired speed pattern signal, and providing a predetermined signal when a predetermined relationship exists between them which causes said control means to control the speed of the elevator car in response to said terminal slowdown speed pattern signal.

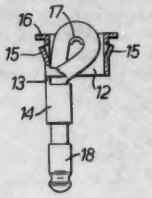
4,318,457

WEAR WARNING INDICATORS FOR FRICTION BRAKES

Erich G. Dorsch, Koblenz, and Dietrich Holz, Lahnstein, both of Fed. Rep. of Germany, assignors to Lucas Industries Limited, Birmingham, England

Filed Mar. 5, 1980, Ser. No. 127,430
Claims priority, application United Kingdom, Mar. 5, 1979, 7726/79
Int. Cl.[3] F16D 66/02
U.S. Cl. 188—1.11 7 Claims

1. A brake friction pad or shoe assembly having friction material for engagement with a brake rotor, said assembly including an electrical wear warning indicator comprising a length of electrically conductive wire which is arranged to contact the brake rotor when there is sufficient wear of the friction material so that when there is such wear the wire engages the rotor upon each brake application to provide an intermittent electrical signal, and is arranged to sever when there is excessive wear of the friction material, at least one of the severed ends of the wire being resiliently urged into engagement with the rotor to provide a continuous electrical signal.

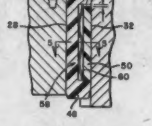


4,318,458

DISK BRAKE AND CONNECTING ASSEMBLY THEREFOR

Irving R. Ritsema, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 4, 1980, Ser. No. 137,091
Int. Cl.[3] F16D 65/02
U.S. Cl. 188—73.44 8 Claims



8. In a disc brake, a torque plate disposed adjacent a rotor to be braked, a caliper cooperating with a pair of friction elements to urge the latter into engagement with the rotor during braking, the torque plate and caliper defining substantially matching slots, a pin assembly disposed within the matching slots, the pin assemby movably mounting the caliper relative to the torque plate, the pin assembly including a first part secured to the torque plate and a second part engageable with the caliper, the second part being movable with the caliper during braking through a predetermined clearance defined by the first part, the first part cooperating with the second part during braking to generate a first friction force opposing movement of the second part relative to the first part, and the second part cooperating with the caliper to generate a second friction force opposing movement of the caliper relative to the second part, the first friction force being less than the second friction force.

4,318,459

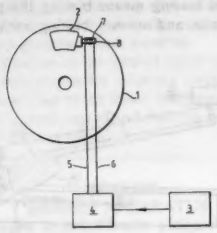
FRICTION CONTROLLERS

John S. Armour, Farnborough, England, assignor to The Minister of Transport in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Great Britain

Filed Jan. 23, 1980, Ser. No. 114,463
Claims priority, application United Kingdom, Jan. 30, 1979, 03207/79
Int. Cl.[3] B60T 8/08
U.S. Cl. 188—181 A 7 Claims

1. A friction controller assembly comprising a rotatable disc member, a friction member arranged to engage the disc member in response to actuating means, a sensor arranged to monitor the angular velocity of the disc member, and vibratory

means operative independently of operation of the actuating means and controlled by said sensor for applying ultrasonic vibration to said friction member when the rate of deceleration of said disc member is in excess of a predetermined value.

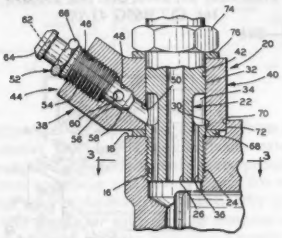


4,318,460

PRESSURIZED FLUID CHAMBER WITH SUPPLY AND BLEED FITTING

Alfred E. Kosinski, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 29, 1979, Ser. No. 98,470
Int. Cl.³ B60T *11/30*
U.S. Cl. 188—352 **8 Claims**



1. In combination, means forming a pressurized fluid chamber for a fluid-operated brake, said chamber-forming means having a single opening therein through which fluid is supplied to the chamber and from which gas can be bled, and a fitting mounted in said opening and extending outwardly therefrom, said fitting having means for bleeding gas from said chamber and means for supplying fluid under pressure to said chamber, characterized by said bleed means comprising a valve seat formed by said fitting and a valve body for opening and closing said valve seat.

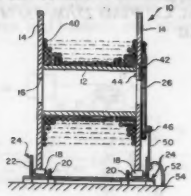
4,318,461

SAFETY GROUNDING FOR METAL CLAD CABLES

William J. Brorein, Whippany, N.J., assignor to GK Technologies, Incorporated, Greenwich, Conn.

Filed Apr. 29, 1980, Ser. No. 145,013
Int. Cl.³ H02G *11/00*
U.S. Cl. 191—12.2 R **12 Claims**

1. A cable reel for metal clad cable including a drum on which the metal clad cable is wound, and flanges for holding the metal clad cable on the drum of the reel, characterized by a grounding structure connected with the metal cladding of the inner end of the cable on the drum, a first annular electrically conductive metal element having a surface constituting part of the grounding structure and concentric with the drum for rotation as a unit with the cable reel, the grounding structure including also a second annular electrically conductive metal element connected with the first element as part of an assembly that connects with and is carried by said reel, said first and second elements having relative movement with respect to one another, said second element being held in slidable electrical and mechanical contact with the first element by an annular grooved flange on said first element which overlaps a surface of the second element, a ground connection secured to the second element, said first and second elements having faces that confront one another with anti-friction bearings held between said elements in annular races and on which the elements have their relative movement with respect to one another, the anti-friction bearings constituting conductors of electricity from the first element to the second element.

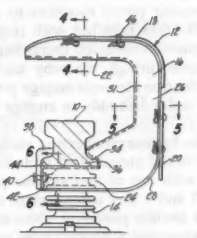


4,318,462

CONTACT RAIL BRACKET

Harold R. Weinhaus, Southfield, Mich., assignor to The Budd Company, Troy, Mich.

Filed Aug. 8, 1980, Ser. No. 176,613
Int. Cl.³ B60M *1/04*
U.S. Cl. 191—30 **8 Claims**



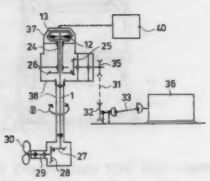
1. A support bracket to be clamped to the contact electrified I-beam rails of electric railroads for supporting protective covers comprising; a body member having upper and lower limbs held in vertically spaced relationship to each other by a vertical support to form a general C-shape, said body member being adapted to be disposed transversely of said rail with a lower limb in engagement with an underside of the rail and the upper limb in spaced relationship to the top of the rail, the body member having a U-shaped cross section with a channel opening radially outwardly of the rail, a pair of aligned flanges projecting in opposite directions from the ends of the legs of the U-shaped cross section to extend longitudinally parallel relative to the rail, and clamping means detachably connected with the end of the lower limb of the body member and adapted to engage and hold the bracket in position relative to the rail.

4,318,463

DOUBLE CONIC COUPLING APPARATUS

Pauli Varis, and Juhani Halkola, both of Rauma, Finland, assignors to Hollming Oy, Finland

Filed Mar. 13, 1980, Ser. No. 129,900
Claims priority, application Finland, Mar. 14, 1979, 790868
Int. Cl.³ F16D *25/06, 13/74*
U.S. Cl. 192—85 AB **6 Claims**



1. Coupling apparatus for rotatably coupling an input shaft to an output shaft of the type including double conic friction surfaces, comprising:

an outer assembly mounted for rotation with the input shaft having a pair of inner conic friction surfaces defining the interior of said outer assembly;

a pair of substantially annularly-shaped piston members located within said outer assembly in opposed relationship to define between them a substantially sealed space;

means for interconnecting each of the annular piston members and the output shaft;

a pair of friction elements having outer conic friction surfaces located within said outer assembly;

means for interconnecting each of the annular piston members to a respective one of said friction elements;

a pair of cup-shaped springs located within said outer assembly, each of said cup-shaped springs being in operative engagement with a respective one of said annular piston members to normally maintain said piston members in respective positions whereby said inner and outer friction surfaces are disengaged, said cup-shaped springs further serving to center said friction elements;

means for directing a fluid under pressure into the space between said annular piston members to move the same away from each other together with respective ones of said friction elements connected thereto against the force of said cup-shaped springs, whereby said outer friction surfaces of said friction elements engage said inner friction surfaces of said outer assembly to engage said couplings; and

wherein said means for interconnecting each of the annular piston members in the output shaft includes a plurality of pins associated with one of said annular piston members and output shaft and a fork arrangement associated with the other of said annular piston members and output shaft in operative engagement with said pins, and wherein the output shaft is rotatably supported by bearing means housed in said outer assembly;

whereby said pin and fork arrangement and bearing means permit the output shaft to be centered with respect to the outer assembly.

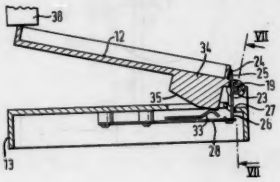
4,318,464

HINGE MECHANISM FOR A COIN TESTING MECHANISM

Michael I. Henville, Maidenhead, England, assignor to Mars, Incorporated, McLean, Va.

Filed Jan. 18, 1980, Ser. No. 113,207
Int. Cl.³ G07F *9/04*
U.S. Cl. 194—97 R **8 Claims**

1. An assembly for a coin testing mechanism, comprising a hinge mechanism, two plates connected by the hinge mechanism, the hinge mechanism comprising a slot which extends generally perpendicular to the plane of one of the plates, a hinge pin mounted parallel to the plates for movement in said slot, the other plate being pivotally mounted about the axis of the hinge pin, first biasing means biasing the plates together about the hinge axis and second biasing means biasing the



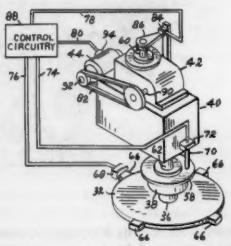
hinge pin towards the said one plate, and actuating means operable to cause the plates to pivot about the hinge axis against the action of the first biasing means and to move apart at the hinge axis against the action of the second biasing means.

4,318,465

INDEXING DRIVE CONTROL

James W. Calvert, Cincinnati, and Charles P. Shinkle, Bethel, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed May 28, 1980, Ser. No. 153,898
Int. Cl.³ B65G *43/00*
U.S. Cl. 198—341 **11 Claims**



1. An apparatus for rotatably transporting workpieces in an indexing manner to and from a plurality of operating stations making up an integrated machine in response to index initiating signals produced as part of a machine cycle of operation, the apparatus comprising:

(a) a rotary driving means;

(b) a workpiece conveying means for carrying a plurality of workpieces;

(c) an indexing mechanism including an input shaft and an output shaft and wherein continuous rotation of the input shaft is converted to intermittent rotation of the output shaft through predetermined segments of a full revolution, each being completed before completion of one revolution of the input shaft, and the input shaft of which is coupled to the rotary driving means and the output shaft of which is coupled to the workpiece conveying means;

(d) first sensing means for detecting an alignment of the workpiece conveying means effecting registration of the workpieces with the operating stations;

(e) means coupled to the first sensing means for producing a first signal indicating the alignment of the workpiece conveying means with the operating stations;

(f) means responsive to the first signal for activating the operating stations;

(g) second sensing means for detecting orientation of the input shaft of the indexing mechanism at a position, depar-

ture from which in a predetermined direction effects immediate output shaft rotation;

(h) means coupled to the second sensing means for producing a second signal indicating alignment of the input shaft of the indexing mechanism at the orientation for immediately effecting output shaft rotation;

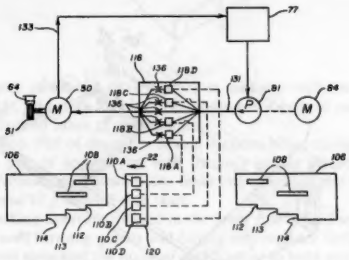
(i) means responsive to the second signal and coupled to the rotary driving means for stopping rotation thereof; and

(j) means responsive to the index intitiating signals for overriding the second signal and thereby causing rotation of the rotary driving means.

4,318,466
RAKER APPARATUS

Louis R. Allard, Ile Bizard, Canada, assignor to Beloit Corporation, Beloit, Wis.

Filed Feb. 28, 1980, Ser. No. 125,539
Int. Cl.³ B65G *65/02*
U.S. Cl. 198—511 **15 Claims**



1. In an apparatus for reclaiming material from a stored pile of such material, including a longitudinally extending truss apparatus, a raker carriage mounted for reciprocal movement along the truss apparatus and having means for engaging the piled material to urge the material downwardly along the face of the pile, and means for gathering the material urged downwardly on the face of the pile, including a motor for reciprocally moving the means for gathering the material along the truss apparatus, wherein the improvement comprises:

location means associated with either end of the truss apparatus for indicating the relative location therealong of the means for gathering the material;

proximity means operatively associated with the means for gathering the material to move therewith and come into proximity with the location means and thereby generate signals corresponding to the relative position of the means for gathering the material along the truss apparatus;

and speed varying means operatively associated with the motor for moving the means for gathering the material, said speed varying means operatively linked with the proximity means to control the speed of the motor for moving the means for gathering the material according to the signals received from the proximity means, whereby the traversing speed along the truss apparatus of the means for gathering the material is varied and controlled.

4,318,467
CONVEYORS

Ernest D. Acton, Long Bank, England, assignor to Alan Acton, Great Britain, a part interest

Filed Feb. 15, 1980, Ser. No. 121,782
Int. Cl.³ B65G *17/36, 35/00*
U.S. Cl. 198—703 **4 Claims**

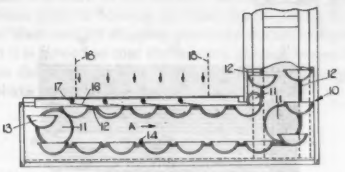
1. A bucket conveyor comprising:

a pair of endless spaced chains;

a plurality of spaced apart buckets, each bucket pivotally supported between said chains, said buckets moving and having a direction of movement, said buckets further having spaces therebetween in said direction of movement;

means defining a loading zone for dropping material into said buckets during said movement, said loading zone extending beyond a single bucket in said movement direction; and

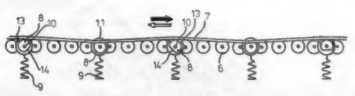
means for preventing said material from falling into said spaces between said buckets, said preventing means comprising a plurality of spaced apart sheets, each sheet comprising a length of flexible sheet having at least two ends, one end of said sheet located above and fixed relative to said loading zone, the other end of said sheet laying on said spaced apart buckets, said sheets extending from said fixed ends toward said direction of movement, each of said sheets having a length slightly longer than a distance between said fixed ends of adjacent sheets.



4,318,468
CONVEYOR DEVICE

Hermanus J. A. Bodewes, Uden, and Jacobus M. van den Goor, Eindhoven, both of Netherlands, assignors to Lear Siegler, Inc., Grand Rapids, Mich.

Filed Mar. 10, 1980, Ser. No. 128,802
Claims priority, application Netherlands, May 11, 1979, 7903711
Int. Cl.³ B65G *35/00*
U.S. Cl. 198—718 **4 Claims**



1. An accumulator conveyor having a conveying surface and a driven endless flexible drive device extending lengthwise thereof, a regulating and support member beneath said flexible device, said member being supported for vertical movement and means resiliently biasing it upwardly; a support element and a circular feeler, said support member having a shaft rotatably mounting said support element beneath said flexible drive and said circular feeler offset laterally to one side of said flexible device, said support element being normally biased into supporting contact with said flexible element and having a chord-like portion of reduced radius forming a flattened rest; said circular feeler member having a diameter such that it projects into the path of objects on said conveying surface whereby an object becoming stationary above said support member will both depress said feeler and restrict rotation thereof until the flattened rest of said support element is directed upwardly, lowering said drive device sufficiently to disengage its drive connection to the object resting on said feeler.

4,318,469
WIRE MESH BAND

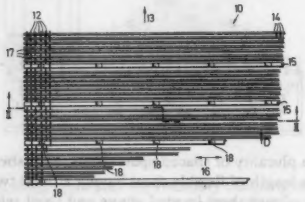
Karl Kufferath-Kassner, Duren-Mariaweiler, Fed. Rep. of Germany, assignor to GKD Gebr. Kufferath GmbH & Co. KG, Duren-Mariaweiler, Fed. Rep. of Germany

Filed Dec. 28, 1979, Ser. No. 107,921

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1979, 2800871

Int. Cl.[3] **B65G** *39/10, 15/24*

U.S. Cl. 198—842 **6 Claims**



1. In a woven wire mesh band having longitudinal warp wires and transverse weft wires for use in conveyors or the like wherein said band travels in the direction of its warp wires over rotatable rollers, the improvement which comprises: guide wires having a flattened surface, an arcuate surface opposite said flattened surface and a width greater than the width or diameter of said weft wires woven transversely into said band with said arcuate surface located on the underside of said band confronting said rollers, said guide wires having protrusions extending beyond the underside of said band adapted to engage in guide grooves on the circumference of said rollers.

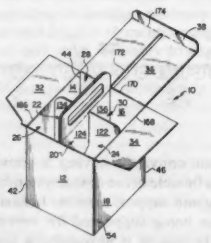
4,318,470
CARTON WITH CELLS AND BLANK FOR FORMING SAME

James Montealegre, W. St. Paul, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Apr. 4, 1980, Ser. No. 137,237

Int. Cl.[3] **B65D** *5/10*

U.S. Cl. 206—180 **12 Claims**



1. A carton with a plurality of cells, comprising: first, second, third and fourth wall panels hingedly coupled at adjacent side edges thereof along fold lines; and collapsible means for automatically forming a bottom, partitions and a handle, said means being hingedly coupled to bottom edges of said wall panels along fold lines and comprising,

first, second, third and fourth bottom panels hingedly coupled to bottom edges of said first, second, third and fourth wall panels, respectively, along fold lines,

first and second divider panels hingedly coupled to said first and third bottom panels, respectively, at end edges thereof remote from said wall panels along fold lines, said first and second divider panels each separated into first and second sections by fold lines extending perpendicular to the fold lines between said wall and bottom panels; each of said first and third bottom panels being separated into first and second portions by a fold line extending from a corner thereof adjacent said wall panels and adjacent said second and fourth bottom panels, respectively, and terminating at an end of the fold line between said first and second sections of the respective divider panel, said second portions of said first and third bottom panels being adjacent and fixed to exterior surfaces of said second and fourth bottom panels, respectively; and

a handle coupled to said divider panels at an edge thereof remote from said bottom panels.

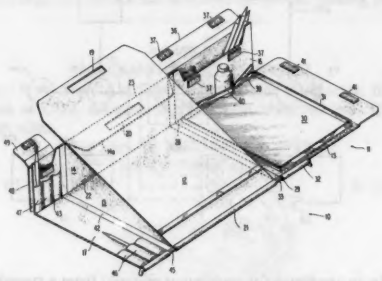
4,318,471
ARTIST'S LAP EASEL

Robert P. Hutton, Box 167, Marshall University, Huntington, W. Va. 25707

Filed Apr. 24, 1980, Ser. No. 143,460

Int. Cl.[3] **A47B** *97/04*

U.S. Cl. 206—214 **13 Claims**



1. An artist's lap easel comprising a plurality of thin generally rectangular panels hingedly joined together at certain of their respective margins to enable said panels to be folded one upon another for carrying and to provide when opened for use:

a supporting panel hingedly joined to an easel panel at a common adjacent margin to provide a first fold line for upwardly tilting of the easel panel;

said supporting panel comprising two substantially rigid sheets hingedly joined together along a second fold line parallel with and spaced from the first fold line, one of the sheets being upwardly tilted to position the easel panel when in use, and detachable fastener means to maintain said adjusted tilted position;

a palette panel hingedly joined to said supporting panel along a third fold line normal to said second fold line to be supported coplanar with said supporting panel and to one side of the tilted easel panel when in use;

said palette panel comprising two substantially rigid sheets hingedly joined together along a fold line in alignment with said second fold line, that portion of the palette panel which is joined to the upwardly tiltable portion of the supporting panel being provided with a pocket accessible from the top when so tilted.

4,318,472
GARMENT HANGER BOX

James F. Nauheimer, Chicago, and Gregory G. Julich, Carol Stream, both of Ill., assignors to Container Corporation of America, Chicago, Ill.

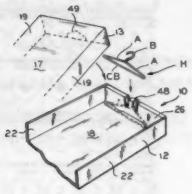
Filed Dec. 29, 1980, Ser. No. 221,348

Int. Cl.[3] **B65D** *85/18*

U.S. Cl. 206—284 **1 Claim**

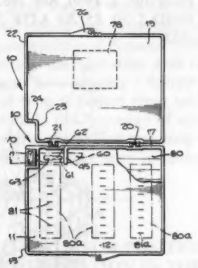
1. In a one piece garment container fromed from a unitary blank of foldable paperboard including a pair of telescoping sections for holding therein a garment on a hanger having a hook, the combination of:

(a) generally rectangular, relatively narrow common bottom wall;
(b) a pair of tray-like sections foldably joined to said bottom wall and disposed for telescoping relation one within the other, each of said sections including:
i. a side wall;
ii. a pair of opposed end walls;
iii. a top wall;
iv. and said common bottom wall;
(c) said top wall of one of said sections being comprised of a pair of top wall forming panels folded into confronting relationship, the inner one of said panels being secured to a side wall;



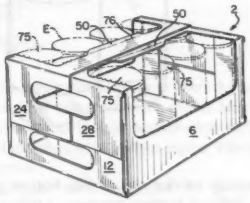
(d) a pair of spaced slots formed in said top wall forming panels, said slots forming there between a post to receive the curved hook of said hanger;
(e) the top wall of the other of said sections being comprised of a pair of second top wall forming panels folded into confronting relationship, the inner one of said panels being secured of a second side wall;
(f) a locking aperture formed in the inner one of said second top wall forming panels and falling into register with said spaced slots and the hook of said hanger to hold the same against movement from around said post.

4,318,473
SURGICAL BLADE REMOVAL AND DISPOSAL DEVICE
Dan S. Sandel, 19524 Halsted St., Northridge, Calif. 91324
Filed Dec. 15, 1980, Ser. No. 216,426
Int. Cl.³ A61B *19/02*; A61F *13/00*
U.S. Cl. 206—370 **13 Claims**



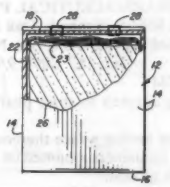
1. A surgical blade removal and disposal device for removing a blade from a handle wherein the blade and handle has a locking portion near the rear of the blade preventing movement of the blade relative to the handle, and the blade has a key slot for receiving an inserted portion on the handle, the inserted portion being slidable in the slot and passing through a wider opening at a portion of the slot permitting the blade to be removed from the inserted portion and off the handle, the device comprising:
(a) rigid guide means at the rear of the device for guiding the handle and its associated blade therethrough, the guide means comprising a handle receiving portion permitting the handle to move downward therein, and shoulder means under -the blade for supporting the rear of the blade, the forward portion of the blade contacting a forward surface of the device, whereby when the handle moves downward in the guide means, the inserted portion of the handle pulls the central portion of the blade downwardly causing it to bow on the shoulder and the forward surface, releasing the locking portion between the blade and the handle and permitting the slot of the blade to slide on the inserted portion;
(b) the guide means further comprising stop means fixed in a position rearward of the shoulder and above the plane of the blade prior to bowing the blade for engaging the rear of the blade and for stopping rearward motion of the blade when it is bowed so that the inserted portion moves in the slot to the wider portion of the slot thereby disengaging the blade from the handle.

4,318,474
12-PACK CARRY BACK CARTON
Gary K. Hasegawa, Chicago, Ill., assignor to The Continental Group, Inc., Stamford, Conn.
Filed Nov. 19, 1979, Ser. No. 95,919
Int. Cl.³ B65D *5/46, 5/54*
U.S. Cl. 206—428 **8 Claims**



1. A carton for initially carrying filled cans and then empty cans comprising a top, a bottom, two sides and two ends wherein one of the ends is comprised of a three-ply laminated hand hold portion said hand hold being flanked by a pair of hand holes in said end wall, and said carton top having a pair of top wall portions overlapped adjacent to the center of the carton and forming a two-ply handle for carrying a carton filled with empty cans, said handle having a pair of tabs one at each side of the handle foldable thereunder under stress over a row of cans disposed thereunder for holding the cans against lateral displacement.

4,318,475
ASPHALT CONTAINER
J. Ronald Robinson, Mesa, Ariz., assignor to Crafco, Inc., Chandler, Ariz.
Filed May 9, 1980, Ser. No. 148,460
Int. Cl.³ B65D *85/00*
U.S. Cl. 206—447 **10 Claims**



1. A container for receiving and containing molten asphalt for subsequent use at a job site, said container comprising in combination:
(a) a rigid disposable shipping enclosure of cardboard; and

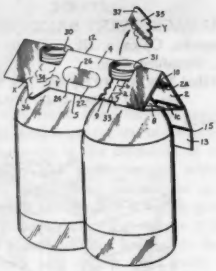
(b) a bag-shaped plastic film liner in said rigid disposable shipping enclosure receiving the molten asphalt at a temperature up to about 250° F., said bag-shaped plastic film liner being formed of a material which becomes molten at temperatures in the range of from above 250° F. to about 285° F.

4,318,476

ARTICLE CARRIER

Prentice J. Wood, Hapeville, and Richard K. Watkins, Lithonia, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Jun. 24, 1980, Ser. No. 162,620
Int. Cl.[3] **B65D** *75/58;* **B66C** *1/10;* **B65D** *75/00, 71/00*
U.S. Cl. 206—459 **12 Claims**



1. An article carrier comprising bottom panel elements arranged to define a bottom aperture, a pair of inwardly sloping inner side walls upstanding respectively from opposite side edges of said bottom panel elements and foldably joined together along a first medial fold line at their upper edges one of which is foldably joined to side edges of said bottom panel elements on one side of the carrier, a pair of inwardly sloping outer side walls at least portions of which are disposed in flat face contacting relation respectively with said inner side walls and upstanding respectively from opposite side edges of said bottom panel elements one of which is foldably joined to side edges of said bottom panel elements on the opposite side of the carrier, a first aperture formed in said inner side walls and disposed astride said first medial fold line and in vertical alignment with said bottom aperture, a second aperture formed in said outer side walls and disposed astride said second medial fold line and in vertical alignment with said first aperture, a pull tab formed in one of said outer side walls and extending between said bottom aperture and said second aperture, and a cut line formed in one of said inner side walls which is in fact contacting relation with said one outer side wall and extending from said one aperture to said bottom aperture.

4,318,477

PHARMACEUTICAL PACKAGE

Stase Z. Kerpe, 9654 S. Kenneth, Oak Lawn, Ill. 60453

Filed Sep. 22, 1980, Ser. No. 189,506
Int. Cl.[3] **G09F** *9/00*
U.S. Cl. 206—534 **9 Claims**

1. A package adapted to store pharmaceutical items, comprising:

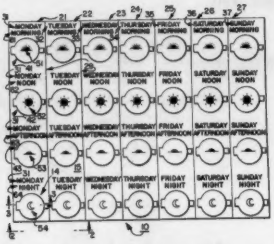
support means having a face thereon;

a plurality of containers mounted on said support means and arranged in groups;

day indicia means on said face arranged opposite each one of the groups of containers for determining which ones of said containers to be emptied during each day;

each one of said containers including receptacle means having open mouths for receiving and storing the pharmaceutical items, closure means having an outer face for covering the open mouths to retain removably the items therewithin, and hinge means for connecting said closure means and said support means for enabling said closure means to swing between a closed position over the respective mouths of said receptacle means to retain the pharmaceutical items therein, and an open position with said closure means disposed substantially in a plane transverse to said face to permit access thereof and to obscure from view the face of the open closure means;

time indicia means disposed on the outer faces of said closure means of each one of said container means of each group



for indicating when said container means are to be emptied by the user thereof during certain times of the day and for indicating when selected ones of said container means are empty by having its closure means disposed in its open position with its time indicia being obscured from view, thereafter determining clearly that the items have been administered therefrom;

each one of said receptacle means includes a concave inner well to facilitate removal of the pharmaceutical items therefrom; and

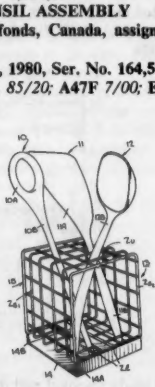
each one of said time indicia being in the form of a symbol.

4,318,478

UTENSIL ASSEMBLY

Koen De Winter, Pierrefonds, Canada, assignor to COPCO, Inc., Secaucus, N.J.

Filed Jul. 2, 1980, Ser. No. 164,502
Int. Cl.[3] **B65D** *5/50, 85/20;* **A47F** *7/00;* **E21B** *19/14*
U.S. Cl. 206—553 **5 Claims**



1. A utensil assembly comprising:

A a set of utensils having long handles and differently-shaped implement components for handling or processing food, the utensils in the set all having substantially the same overall length;

B a rack for supporting the utensils at separated, substantially upright positions to facilitate the selection of utensils by a user, said rack including a raised gridwork formed by a lattice bent into a tube having a rectangular cross section whose lower zone is formed by the adjacent ends of the lattice and whose upper zone is parallel thereto, said zones

creating a network of cells acting as receptacles to receive the handles of the utensils, each of which extends through a respective cell in the upper zone and a cell in the lower zone, and

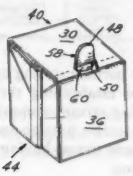
C a pedestal to support said rack to provide a space between the lower zone and the ground plane, said pedestal being defined by a rectangular plate having upturned ends, the adjacent ends of the lattice tube bridging said upturned ends and being secured to the upper edges thereof, the free lower ends of the handles resting on said plate, the implement components of the utensils being then disposed well above the upper zone of the gridwork to expose the upper portions of the handles.

4,318,479

LIQUID CONTAINER WITH STRAW OPENING MEANS

Robert E. Lisiecki, Orchard Lake, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Apr. 28, 1980, Ser. No. 144,132
Int. Cl.³ B43M *7/00*; B65D *3/26, 5/72*
U.S. Cl. 206—633 **7 Claims**



1. In a liquid carrying paperboard container coated overall with a thermoplastic material that serves as a barrier and becomes an adhesive when subjected to heat, and including a tubular body having four walls wherein one wall includes overlapped and sealed panels and serves as the top of the container, and flat end closures formed on opposite ends of said tubular body, the improvement comprising means for forming a straw opening in said tubular body intermediate said flat end closures and including a tear strip formed by cuts through the outer one of said overlapped panels along a pair of spaced apart lines beginning at the edge thereof adjacent the underlying panel of said overlapped panels and extending in a predetermined configuration a predetermined distance from the edge, a tab formed as an extension of said tear strip, with the inner ends of said pair of spaced apart lines defining a flexible hinge therebetween when said tear strip is peeled from said underlying panel, and a notch formed in the free edge of said underlying panel aligned with and adjacent to said tear strip to provide a straw hole opening when said tear strip is peeled back from said underlying panel.

4,318,480

METHOD AND APPARATUS FOR POSITIONING THE POINT OF DROPLET FORMATION IN THE JETTING FLUID OF AN ELECTROSTATIC SORTING DEVICE

Igino Lombardo, Sharon, and W. Peter Hansen, Middleboro, both of Mass., assignors to Ortho Diagnostics, Inc., Raritan, N.J.

Filed Aug. 20, 1979, Ser. No. 68,113
Int. Cl.³ B07C *5/342*
U.S. Cl. 209—3.1 **13 Claims**

1. An electrostatic particle sorting system, comprising:

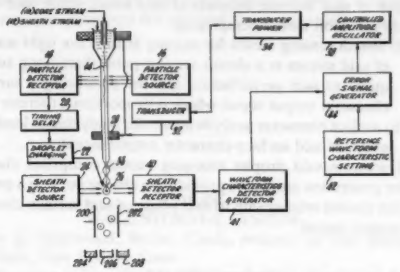
(a) flow means for establishing the flow of a continuous particle containing stream comprising at least a particle containing core stream portion and a surrounding sheath stream portion, said stream having a particle sensing point defined therealong;

(b) particle sensing means for optically detecting said particles at least at said particle sensing point;

(c) perturbation means for perturbing said stream with at least a preselected frequency and amplitude to cause said stream to form a breakpoint at which said stream become a series of discrete droplets;

(d) droplet charging means for relatively charging selected ones of said droplets as they are formed at said breakpoint; and

(e) synchronization means for timing said relative charging such that said selected droplets contain at least selected particles detected by said optical detection means; said synchronization means comprising:



(i) sheath sensing means for sensing at least the light scatter characteristic of said stream at a sheath sensing point therealong subsequent to said perturbation and for producing a surface character output signal which is proportional thereto;

(ii) surface character analysis means for producing an output signal which is at least selectively responsive to said surface character output signal; and

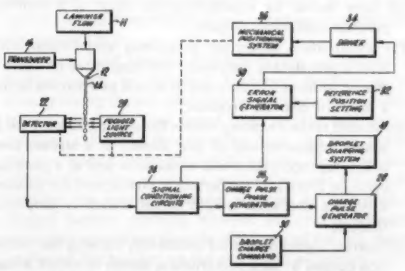
(iii) amplitude adjustment means responsive to said surface character analysis means for adjusting said amplitude of said perturbation means for establishing and maintaining said breakpoint at said sheath sensing point.

4,318,481

METHOD FOR AUTOMATICALLY SETTING THE CORRECT PHASE OF THE CHARGE PULSES IN AN ELECTROSTATIC FLOW SORTER

Igino Lombardo, Sharon, and Donald E. Barry, Norwood, both of Mass., assignors to Ortho Diagnostics, Inc., Raritan, N.J.

Filed Aug. 20, 1979, Ser. No. 68,234
Int. Cl.³ B07C *5/342*
U.S. Cl. 209—3.1 **16 Claims**



1. An electrostatic particle sorting system, comprising:

(a) flow means for establishing the flow of a continuous particle containing stream comprising at least a particle containing core stream portion and a surrounding sheath stream

portion, said stream having a particle sensing point defined therealong;

(b) optical detection means for optically detecting said particles at least at said particle sensing point;

(c) perturbation means for perturbing said stream with at least a preselected frequency and amplitude to cause said stream to form a break point at which said stream becomes a series of discrete droplets;

(d) droplet charging means for relatively charging selected ones of said droplets as they are formed at said break point;

(e) synchronization means for performing said relative charging at a preselected time with respect to the phase of formation of said discrete droplets at said break point, said synchronization means comprising:

(i) sheath sensing means for sensing at least the light scatter of said stream at a sheath sensing point therealong subsequent to said perturbation, and for producing a surface character output signal which is proportional thereto; and

(ii) surface character analysis means for analyzing at least the phase of said surface character output signal;

and wherein said droplet charging means comprises charge pulse generation means for providing a charge pulse in a preselected phased relationship to said phase of said surface character output signal.

4,318,482

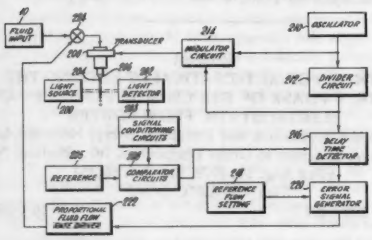
METHOD FOR MEASURING THE VELOCITY OF A PERTURBED JETTING FLUID IN AN ELECTROSTATIC PARTICLE SORTING SYSTEM

Donald E. Barry, Norwood, and Igino Lombardo, Sharon, both of Mass., assignors to Ortho Diagnostics, Inc., Raritan, N.J.

Filed Aug. 20, 1979, Ser. No. 68,235

Int. Cl.³ B07C 5/342

U.S. Cl. 209—3.1 **15 Claims**



1. An electrostatic particle sorting system comprising:

(a) flow means for establishing the flow of a continuous particle containing stream;

(b) perturbation means for perturbing said stream with at least a preselected frequency and amplitude to cause said stream to form a breakpoint at which said stream becomes a series of discrete droplets;

(c) stream surface sensing means for sensing at least the light scatter characteristic of said stream at a stream sensing point disposed above said breakpoint and at a preselected distance from said perturbation means; and for producing a surface character output signal which is proportional thereto;

(d) marker signal means for selectively varying the perturbation caused by said perturbation means to create a marker signal in said stream; and

(e) marker signal detection means for monitoring said surface character output signal to detect the arrival of said marker signal at said stream sensing point.

4,318,483

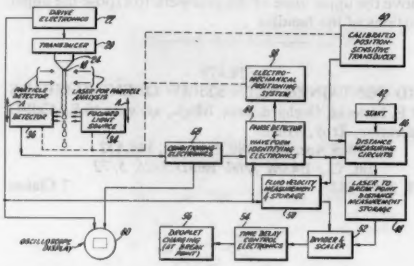
AUTOMATIC RELATIVE DROPLET CHARGING TIME DELAY SYSTEM FOR AN ELECTROSTATIC PARTICLE SORTING SYSTEM USING A RELATIVELY MOVEABLE STREAM SURFACE SENSING SYSTEM

Igino Lombardo, Sharon, and Donald E. Barry, Norwood, both of Mass., assignors to Ortho Diagnostics, Inc., Raritan, N.J.

Filed Aug. 20, 1979, Ser. No. 68,259

Int. Cl.³ B07C 5/342

U.S. Cl. 209—3.1 **26 Claims**



1. An electrostatic particle sorting system, comprising:

(a) flow means for establishing the flow of a continuous particle containing stream comprising at least a particle containing core stream portion and a surrounding sheath stream portion, said stream having a particle sensing point defined therealong;

(b) optical detection means for optically detecting said particles at least at said particle sensing point;

(c) perturbation means for perturbing said stream with at least a preselected frequency and amplitude to cause said stream to form a breakpoint at which said stream becomes a series of discrete droplets;

(d) droplet charging means for relatively charging selected ones of said droplets as they are formed at said breakpoint; and

(e) synchronization means for timing said relative charging such that said selected droplets contain at least selected particles detected by said optical detection means, said synchronization means comprising: sheath sensing means for selectively sensing at least the light scatter characteristic of said stream at any of a plurality of sheath sensing points therealong and for selectively producing any of a plurality of surface character output signals, each of which is proportional to the surface character of said stream at one of said plurality of sheath sensing points.

4,318,484

DEVICE FOR SORTING OUT INDIVIDUAL ARTICLES WHICH DIFFER FROM THE MAIN QUANTITY IN A CONSECUTIVE FEEDOUT

Allan Stiernspetz, Björkö Nykil, Sweden, assignor to Datasaab AB, Jarfalla, Sweden

Filed May 6, 1980, Ser. No. 147,012

Claims priority, application Sweden, May 8, 1979, 7904032

Int. Cl.³ G07D 1/00, 9/00

U.S. Cl. 209—534 **5 Claims**

1. A device for sorting out individual articles in the form of sheets deviating from the main quantity of a consecutive feedout, said device comprising:

a first pair of cooperating rollers (5, 6),

a second pair of cooperating rollers (3, 4),

a third pair of cooperating rollers (1, 2),

a first set of conveyor belts (11),

a second set of conveyor belts (12),

a stationary member (13),

and a collecting box (9), the axes of the rollers in said first pair of cooperating rollers being disposed in a plane at

right angles to a feed-in-plane for said articles through a nip formed between said rollers,

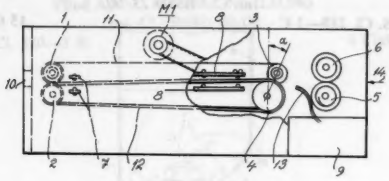
the axes of the rollers in said second pair of rollers being disposed in a plane forming an acute angle to a plane disposed at right angles to the feed-in plane,

the axes of the rollers in said third pair of cooperating rollers being diposed in a plane lying at right angles to a feedout plane for said articles through a nip formed between said rollers,

said first set of conveyor belts passing around one roller in each of said second and third pairs of rollers,

said second set of conveyor belts passing around a second roller in said second and third pairs of rollers,

motor means drivably coupled to said first and second pairs of rollers with said first and second belts running partially in approximately a common plane,



sensing means (8) controllably connected to said motor means and operatively disposed to sense articles conveyed between said first and second sets of conveyor belts in said common plane,

said stationary member being located lower than said first pair of rollers and being shaped such that articles conveyed into the nip of said first pair of rollers and into the nip of said second pair of rollers for being passed between said sensing means will pass over said stationary member, whereas if said sensing means reject the relevant article and concurrently reverse the motor said article will be rejected by the direction of motion of the first and second sets of belts being reversed, thereby releasing the article for passing the latter below said stationary member, and

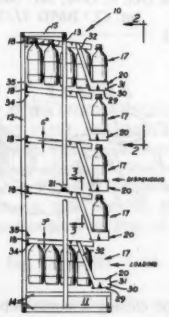
said reversed articles being collected in said collecting box.

4,318,485

GRAVITY FEED MERCHANDISE DISPENSING DEVICE

Joseph Clement, Bradenton, Fla., assignor to The Mead Corporation, Dayton, Ohio

Filed Jan. 2, 1980, Ser. No. 109,061
Int. Cl.³ A47F 7/00; B65B 21/06
U.S. Cl. 211—49 D **8 Claims**



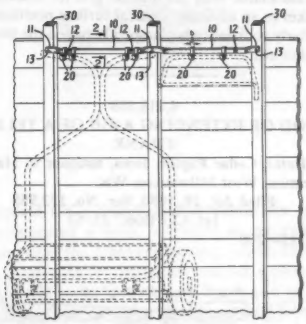
1. A gravity feed merchandise dispensing device comprising at least one track, each track having a front and a rear end for supporting in tandem a row of similar bottles of the type having an annular flange on the neck of the bottle, each track also comprising a pair of rails spaced apart to receive between them the necks of suitably sized bottles such that the underside of each bottle neck flange engages the rails whereby the bottles are suspended by their flanges for movement relative to the track, each track normally being inclined towards the front end so as to permit the suspended bottles to gravity feed one after the other to the front end of the track as the lead bottles in the row successively are unloaded, and in which said front end includes a length of track which is upturned relative to the immediately preceding track length to provide a braking section above the plane of said immediately preceding track length along which each lead bottle travels so that it is braked to a stop and presented for removal from said track.

4,318,486

WALL STORAGE SYSTEM

Louis G. Bobrowski, Berlin, Conn., assignor to The Stanley Works, New Britain, Conn.

Continuation of Ser. No. 830,108, Sep. 2, 1977, abandoned. This application Feb. 1, 1979, Ser. No. 8,577
Int. Cl.³ A47F 5/08
U.S. Cl. 211—87 **8 Claims**



1. A wall storage system for storing loads of various shapes on a wall comprising:

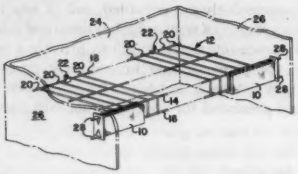
an elongated rigid rail having regions adapted to be attached to the wall, said rail having a length, a width that is smaller than its length and a thickness that is smaller than the width, at least one transverse groove being formed across the entire width of the rail to reduce its thickness at the groove; and

at least one rigid support bracket having an arm section integral with an inverted U-shaped fastener section closely fitting the rail, said fastener section, when attached to the rail, having an upper base portion and two leg portions extending downwardly from the base portion, the arm section being adapted to support the stored loads, a protrusion being provided on the bracket at the junction between the arm and fastener sections to reduce the U-shaped fastener opening between the two downwardly extending legs to less than the thickness of the rail, thereby capturing the bracket on the rail while permitting it to be moved along the rail to a desired position for supporting the selected load, the U-shaped fastener opening being of sufficient width to enable the bracket to be added to or removed from the rail at the groove.

4,318,487
ADJUSTABLE END BRACKET

Dennis J. McCarthy, Springfield, Ohio, assignor to D & H Manufacturers, Inc., Springfield, Ohio

Filed Feb. 8, 1980, Ser. No. 119,616
Int. Cl.[3] A47F 5/01
U.S. Cl. 211—134 13 Claims



1. An end bracket for a modular coated wire shelf of the type having front rails and a back rail joined to the front rails by a plurality of stringers comprising:

a block having a plurality of vertical raised ribs defining slots therebetween of a size to receive a stringer;

a bracket arm;

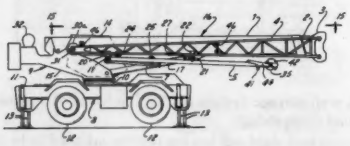
means for adjustably clamping the block to the bracket arm such that the bracket arm is slidably adjustable with respect to the block and to front rails clamped therebetween and such that stringers may be held within the slots of the block; and

means associated with the bracket arm for attaching the end bracket to an adjacent vertical surface positioned perpendicularly to front rails clamped between the block and the bracket arm.

4,318,488
METHOD OF EXTENDING A JIB OF A TELESCOPIC CRANE

Ram N. Rathi, Cedar Rapids, Iowa, assignor to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Jul. 28, 1980, Ser. No. 172,955
Int. Cl.[3] B66C 23/62
U.S. Cl. 212—270 30 Claims



1. A method of operating a telescoping boom pivotable about a horizontal axis near its base and having a base section and another section telescopingly mounted within said base section and also having an extension and a jib; said sections, said extension and said jib when in an extended position each having a base end and a point end in respect to said boom base; wherein said other section is telescoped within said base section, wherein said extension is pivotally mounted about a generally vertical axis at its base end to the point end of said other section and is folded back alongside said base section, and wherein said jib lies along and generally beneath said extension and is releasably attached to said base section, said method comprising the steps of:

(a) extending said other section whereby said extension is carried therewith and until the point end of said extension is adjacent the base end of said jib;

(b) attaching said jib to said extension;

(c) further extending said other section to move said jib and release said jib from said base section;

(d) pivoting said extension about said vertical axis to a position in alignment with said other section and carrying said jib therewith,;

(e) fixing the position of said extension on said other section after pivoting;

(f) pivotally attaching the base end of said jib to the point end of said extension;

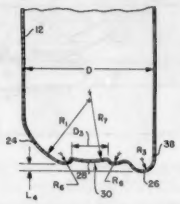
(g) pivoting said jib into operative alignment with said extension; and

(h) locking said jib in respect to said extension in said operative alignment.

4,318,489
PLASTIC BOTTLE

John A. Snyder, and Robert L. Wechsler, both of Bridgewater, N.J., assignors to PepsiCo, Inc., Purchase, N.Y.

Filed Jul. 31, 1980, Ser. No. 174,242
Int. Cl.[3] B65D 23/00
U.S. Cl. 215—1 C 15 Claims

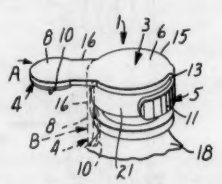


1. A self-standing, biaxially-oriented, plastic bottle having a body with a generally vertical wall of substantially circular cross-section, said bottle having a bottom depending from said wall, said bottom being formed integrally with said body and having a principal spherical surface, said bottom having at least three depending feet positioned around the periphery of said bottom on which feet the bottle stands vertically on a horizontal surface, the lower portion of said feet being of substantially spherical configuration, said feet having a wall portion above said spherical portion with the outer periphery of said wall portion taken from the center of the bottle being in substantial vertical alignment with the wall of said body, said principal spherical surface of said bottom extending between adjacent said feet and inwardly of said feet toward the center of said bottle.

4,318,490
BOTTLE CLOSING DEVICE

John F. Schneider, Lake Elmo, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Oct. 6, 1980, Ser. No. 194,624
Int. Cl.[3] B65D 51/20
U.S. Cl. 215—232 9 Claims



1. A device for closing a bottle top comprising a closure portion and a tab portion, said tab portion being attached to said closure portion, said closure portion comprising a sheet of polymeric material which is conformable to a bottle top while being relatively stiff, impermeable to micoorganisms, relatively unaffected by water, incapable of passing liquid water

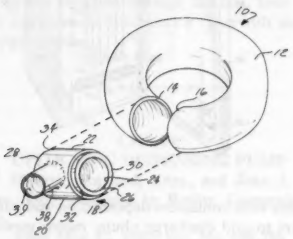
therethrough, and having a conformability of at least 15 and a stiffness of at least 50, said closure portion containing an adhesive on one major surface thereof, said adhesive covering substantially at least the entire periphery of said major surface thereof and being relatively unaffected by water and non-toxic, said tab portion being relatively non-tacky on at least a portion thereof.

4,318,491

TOROIDAL PRESSURE VESSEL

Richard E. Nelson, 53 E. Tacoma, Clawson, Mich. 48017, and Thomas J. Starr, 31409 Mound Rd., Apt. F, Warren, Mich. 48092

Filed Apr. 7, 1980, Ser. No. 137,983
Int. Cl.³ B65D *90/00*
U.S. Cl. 220—1 B **4 Claims**



1. A toroidal shaped container comprising:
a body made from tubing with an inside diameter and outside diameter formed into a ring with tube ends aligned and spaced apart a distance;
a closure piece welded between the aligned ends to form a closed container;
a short tube exceeding in length the distance between aligned ends, having an outside diameter equalling the tubing outside diameter, an inside diameter less than the tubing inside diameter, a reduced diameter formed along each end of the closure piece producing a pair of opposed shoulders, said reduced diameter snugly engaging the tubing inside diameter with the shoulders abutting tube ends, a weld deposited along the abutting ends and shoulders to form an integrated structure.

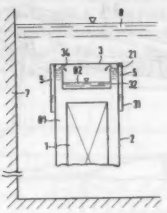
4,318,492

FUEL ASSEMBLY STORAGE CAPSULE FOR STORING SPENT FUEL ASSEMBLIES

Martin Peehs, Bubenreuth, and Werner Petri, Erlangen, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,273
Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919797
Int. Cl.³ B65D *53/06*
U.S. Cl. 220—228 **3 Claims**

1. Fuel assembly storage capsule for storing spent fuel assemblies in water-filled fuel pits, the capsule being formed of a sleeve sealed at the bottom thereof, having an upper opening closable by a cover and having a cross section matching that of a fuel assembly to be received therein, comprising a rim formed on the cover and laterally embracing the sleeve in installed condition of the cover, the cover being retained on the sleeve of its own weight exclusively, the inner surface of



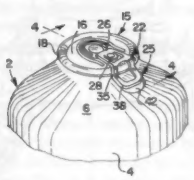
the sleeve and said cover rim, in installed condition of the cover, under water, defining an annular space filled with air.

4,318,493

EASY OPENING CONTAINER

Robert Jacobsen, Wheaton, and Joseph E. Connor, Palatine, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

Filed Sep. 26, 1980, Ser. No. 191,223
Int. Cl.³ B65D *17/34*
U.S. Cl. 220—270 **11 Claims**



1. A closure for a thin-walled container for pressurized contents comprising a body, a bottom at one end, a dome-shaped member at the other end having a small diameter neck providing an opening for filling and pouring, a closure providing an expanded panel closing said opening, a score in said panel defining a tear out panel portion, a tab having a nose overlying said panel portion, means securing said tab to said panel outside said tear out panel portion, said tab adapted to rupture said score pursuant to lifting of the tab and thereafter to push said tear out panel portion into the container, said tab having a portion extending along said neck and engageable with a peripheral portion of said panel to maintain said tab in position to fracture said score.

4,318,494

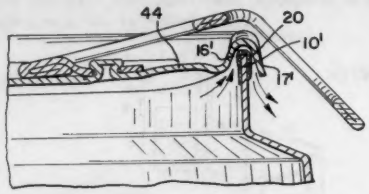
EASY OPENING CONTAINER WITH VENT MEANS

William M. Heyn, New Canaan, Conn., assignor to The Continental Group, Inc., New York, N.Y.

Filed Sep. 26, 1980, Ser. No. 191,224
Int. Cl.³ B65D *17/34, 51/16*
U.S. Cl. 220—271 **8 Claims**

1. A closure for a container for pressurized contents comprising a body having a bottom at one end and an end member at the other end, means securing said end member to said body, a score in said end member defining a tear out panel portion, a tab secured to said end member having a nose overlying said panel portion, means securing said tab to said end member outside tear out panel portion, said tab and means securing said tab formed and arranged to rupture said means securing said

end member to said body pursuant to lifting of the tab for venting the container, and said tab operative thereafter to



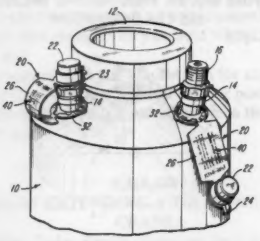
rupture the score and push said tear out panel portion into the container.

4,318,495

REUSABLE SANITARY DUST CAP FOR A BEVERAGE TANK VALVE

Arthur A. Wood, Greenville, Ohio, assignor to Replicap Products, Inc., Greenville, Ohio

Filed Sep. 29, 1980, Ser. No. 191,678
Int. Cl.[3] B65D *55/16*
U.S. Cl. 220—375 **7 Claims**



1. In a reusable sanitary cap unit adapted for protecting a dispensing valve projecting from a portable tank containing a consumable beverage product, said cap unit including a cup-shaped cap portion having means for attaching to the dispensing valve in covering relation, a ring-like retaining portion adapted to extend around the base of the dispensing valve, and said cap portion and said retaining portion being molded of a flexible plastics material, the improvement wherein said cap portion and said retaining portion are integrally connected by an integrally molded card-like tag portion, said tag portion having a width greater than the width of said cap portion and being flexible to provide for bending said tag portion to attach said cap portion to the dispensing valve while said retaining portion is attached to the valve, and said tag portion being provided with information identifying the beverage product within the tank.

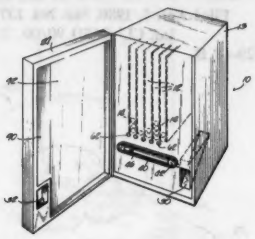
4,318,496

VENDING MACHINE WITH SIDE DELIVERY AND CROSS CONVEYOR

Carl E. Spring, La Crosse, Wis., assignor to La Crosse Cooler Company, La Crosse, Wis.

Filed Jan. 28, 1980, Ser. No. 116,070
Int. Cl.[3] B65G *59/06*
U.S. Cl. 221—129 **2 Claims**

1. In a coin operated vending machine having a frame and door and a plurality of vertically oriented container storage racks supported on said frame and located interiorly of said door and arranged in side by side relationship, with each of said racks being provided with a vend mechanism including gate means for releasing selected containers in response to actuation of an electrical circuit by deposit of proper coinage, the improvement comprising conveying means located beneath the gate controlled storage racks, said conveying means intercepting and conveying laterally a discharged container released by a gate to a first discharge chute located adjacent one side of the vending machine and wherein the door of said vending machine includes a second discharge chute proximate the side edge of the door and in registry with said first chute to emit the conveyed container whereby said door front surface is generally uninterrupted by container access slots to enable use of the door for an advertising display, said vending machine including a pan beneath said storage racks, said conveying means including spaced endless chains, motor means connected to the endless chains to drive the chains in a conveying path, and a sweep bar connected between the spaced chains



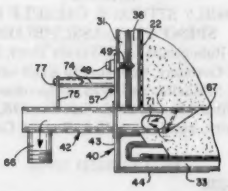
and engageable with containers deposited on said pan to sweep the containers to said discharge chute, motor means for said gate means and a circuit connecting said motor means of said gates and said motor means for said conveyor, said circuit including a stop switch having a switch actuator positioned in the path of travel of said sweep bar and said stop switch being electrically connected in said circuit whereby energization of said vend mechanism causes energization of said conveyor motor to move the sweep bar across said pan to sweep the deposited container from the pan into said discharge chute and said stop switch being actuated by said sweep bar to de-energize the conveyor motor and stop movement of the sweep bar in advance of the sweeping stroke used to move containers to the discharge chute so that said sweep bar is in position for a complete sweeping stroke for the next vend cycle.

4,318,497

CORRUGATED SHIPPING CONTAINER FOR VISCOUS REFRACTORY SLURRIES AND DISCHARGE APPARATUS THEREFOR

James F. Friedrich, Westmont, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Jun. 23, 1980, Ser. No. 162,011
Int. Cl.[3] B65D *77/06*
U.S. Cl. 222—83 **10 Claims**



1. A combination container and discharge apparatus for a viscous refractory slurry,

said container including:

a box of rigidized corrugated board having a bottom wall,

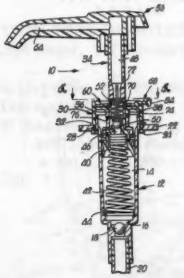
opposed upright side walls extending from the bottom wall, and closure flaps at the upper ends of the side walls,
a liner of rigidized corrugated board having opposed upright panels of substantially the same size as the side walls and in juxtaposition therewith,
a plastic bag within the liner within which the slurry is contained,
a pallet disposed beneath the box,
and strapping means connected to the pallet and extending over opposed side walls and the closure flaps to fasten the filled box onto the pallet;
said discharge apparatus including:
a mounting plate attachable to the box and having an opening therethrough, said opening having seal means,
a guide and seal member attachable to said mounting plate,
and a tubular discharge spout having a discharge opening and coacting with the mounting plate seal means and the guide and seal member when mounted on the container, said spout having a knife edge for penetrating the container during insertion through the box, liner and plastic bag to interconnect the interior therewith and having a discharge opening.

4,318,498

UPLOCKING DISPENSING PUMP

Wallace F. Magers, Leawood, Kans., and John J. Palmisano, Gladstone, Mo., assignors to Realex Corporation, Kansas City, Mo.

Filed May 12, 1980, Ser. No. 148,756
Int. Cl.³ B67D *5/32*
U.S. Cl. 222—153 **9 Claims**



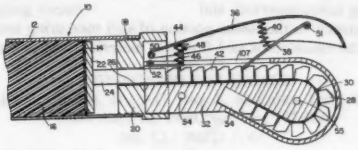
1. In combination with a hand-operated dispensing pump having a depressible plunger and normally stationary structure adjacent the plunger, a releasable lock for preventing depression of the plunger comprising:
a generally flat, unitary member disposed generally transversely of said plunger and receiving the latter in at least partial circumscribing relationship therewith,
said member having a plunger-engaging portion normally inclined slightly outwardly in the direction of extension of the plunger but being flexible into a reversely inclined condition in the direction of depression of the plunger,
said member being cooperable with said structure when in engagement therewith and said portion is in its normally outwardly inclined condition to oppose depression of the plunger and being operable when said portion is manually flexed to its reversely inclined condition to permit depression of the plunger,
said plunger being provided with a notch for lockingly receiving said portion of the member when the latter is in said normally outwardly inclined condition.

4,318,499

RETAINER AND PROPULSION APPARATUS CARRIED IN A SELF-CONTAINED HANDLE FOR USE WITH A REMOVABLE CARTRIDGE

Joel A. Hamilton, 101 Hardenburgh Ave., Demarest, N.J. 07627

Filed Aug. 18, 1980, Ser. No. 179,257
Int. Cl.³ B67D *5/42*
U.S. Cl. 222—327 **17 Claims**



1. A retainer and propulsion apparatus carried in a selfcontained handle, said propulsion apparatus for use with a disposable tubular cartridge having a dispensing end and a larger end into which a propulsion disc is entered to drive a cup-shaped closure toward the dispensing end, said apparatus including:
(a) means for securely retaining a disposable tubular cartridge by its larger end to said propulsion apparatus, said apparatus having an end member providing the support for said securing means, and an aperture formed through said end member;
(b) a rigid shank portion movable in and through said aperture in said end member;
(c) a piston disc attached to and carried by said rigid shank and disposed to engage and move the cup-shaped closure in said cartridge;
(d) a flexible drive train attached to the rigid shank and having regularly spaced and shaped ratcheting means by which a precise movement of the drive train can be achieved;
(e) a housing which includes a cover portion and a mating portion secured together in a closed condition;
(f) a curved track formed and provided in the housing, said track adapted to slidably carry the shank and secured flexible drive train, the curved track providing a trackway guide and support for the drive train when the housing is closed;
(g) a lever handle pivotally carried and attached to the housing and disposed above said housing;
(h) a pawl leaf having one end pivotally secured to said lever handle and moved thereby, said pawl leaf biased away from said handle, the other end of said pawl leaf entering the housing through an opening to and into the curved track and adapted to engage and move the drive train at the ratcheting means, a movement of the lever handle and the pawl leaf toward the housing causing the engaged end of the leaf to move the drive train forwardly;
(i) a stop finger also pivotally mounted on the lever handle, said stop finger having an engaging portion disposed to enter the trackway and engage the ratcheting means and prevent unwanted movement of the drive train counterflow to the action of the pawl leaf, and
(j) biasing and limiting means associated with the stop finger and the lever handle to provide and limit the outward movement of the lever handle with respect to the position of the stop finger.

4,318,500

CAP FOR DISPENSING PREDETERMINED QUANTITIES OF FLOWABLE MATERIAL

Robert B. Melikian, 235 E. 51st St., New York, N.Y. 10022

Continuation of Ser. No. 844,234, Oct. 21, 1977, abandoned. This application Apr. 21, 1980, Ser. No. 141,864
Int. Cl.³ G01F *11/26*
U.S. Cl. 222—425 **6 Claims**

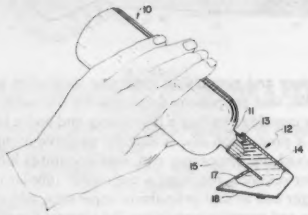
1. Measuring and dispensing cap for a container comprising a housing having a passage section for the passage of flow-

able materials from the container and a measuring section for maintaining a predetermined amount of flowable material passing from the passage section, said measuring section having an upper passage portion and a lower outlet portion,

a substantially vertical common wall internally of said housing partially dividing said passage section from said measuring section at the upper passage portion of the measuring section to compartmentalize said housing,

said passage section, measuring section and vertical wall being interconnected, and

outlet means in the lower portion of said measuring section for the emission of said flowable material from said measuring section including an outwardly and downwardly extending and upwardly facing planar wall portion containing an upwardly facing aperture, and a closure means disposed in substantially removable closing relation with said aperture, whereby when said container is tilted from an upright position, flowable material therein passes through said passage section and a predetermined amount passes at the upper passage portion into said measuring section and is maintained therein at the lower outlet portion when said container is returned to said upright position for emission through said outlet means in the upright position of the container upon removal of the closure means to open said aperture.

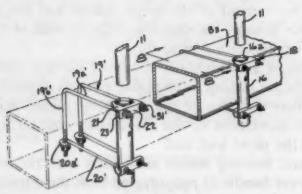


4,318,501

BUMPER MOUNTED CARRIER RACK

Joseph V. Graber, 3739 County Trunk M, Middleton, Wis. 53562

Filed Aug. 29, 1980, Ser. No. 182,450
Int. Cl.³ B60R *9/06, 9/10*
U.S. Cl. 224—42.03 R **7 Claims**



1. In a bumper mounted carrier rack of the type having a pair of laterally spaced downwardly extending rack legs, a pair of flush mounted bumper brackets for detachably mounting the rack on a bumper, each bumper bracket comprising:

(a) a tubular bumper post having an internal dimension to slidably receive the lower end portion of a respective rack leg and an outwardly flared lip at its upper end,

(b) a bumper post clamp including an upper plate portion having a bumper post receiving hole dimensioned to receive a tubular bumper post with the lip overlying the plate portion for support thereon, the post clamp having a flange portion extending transverse to the plate portion along one edge of the latter and a lip portion extending laterally from the flange portion below the plate portion for engaging the side of a bumper post, the flange portion having a pair of bolt receiving openings adjacent relatively opposite sides of the hole in the plate portion,

(c) a pair of bumper hangers each having an elongated shank with a transversely extending bumper engaging means at one end and a threaded portion on the other end adapted to extend through respective ones of the bolt receiving openings in the flange at relatively opposite sides of the bumper post, and nut means threaded on the threaded portions of the shanks to draw the bumper post clamp against the bumper posts.

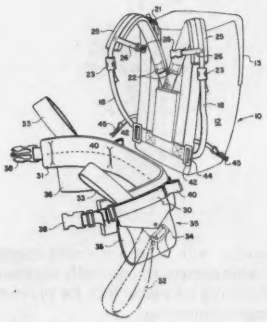
6. In a bumper mounted carrier rack of the type including a member adapted to overlie the outer side of the bumper, a first bumper hanger including an L-shaped bolt having an elongated shank and a bumper engaging leg integral with one end of the shank and extending transverse thereto and terminating in an external threaded portion, a second bumper hanger having an elongated shank and an eye integral with one end thereof for receiving the externally threaded end portion of said bumper engaging leg, means threaded on the threaded end portion of said bumper engaging leg of said first bumper hanger for adjusting the eye of said second hanger therealong, the shanks of the first and second bumper hangers each having threads on the other ends thereof and means threadedly adjustable thereon and engaging said member for clamping the member against the outer side of the bumper.

4,318,502

BACK PACK HAVING A RELEASABLE CLIMBING HARNESS

Greg E. Lowe, Ogden, Utah, and Michael R. Lowe, Eldorado Springs, Colo., assignors to Lowe Alpine Systems, Inc., Lafayette, Colo.

Filed Dec. 8, 1978, Ser. No. 967,655
Int. Cl.³ A45F *3/10*
U.S. Cl. 224—153 **10 Claims**



1. A back pack and support harness assembly comprising:

a storage enclosure assembly including an enclosure adapted to contain and protect material for transport and including shoulder strap means attached to the enclosure and adapted to secure the enclosure to the shoulder area of a wearer; and

a support harness assembly comprising a belt member having groin straps depending therefrom with at least one end of each of the groin straps being fixedly attached to the belt member, at position spaced from the end portions thereof, the support harness assembly being releasably attached to the enclosure assembly by means manually releasable from the enclosure assembly whereby the support harness may be utilized as a belt member to assist in supporting the enclosure on a wearer or alternatively may be employed with the groin straps to support the wearer

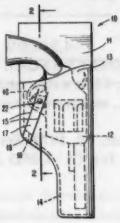
when suspended through the belt member from support means such as a rope.

4,318,503

PISTOL HOLSTER WITH LOCK-IN MEANS

James J. Capano, Seaford, N.Y., assignor to Manno Uniform and Security Equipment Corp., Seaford, N.Y.

Filed Sep. 26, 1980, Ser. No. 191,252
Int. Cl.³ F41C *33/02*
U.S. Cl. 224—244 **8 Claims**



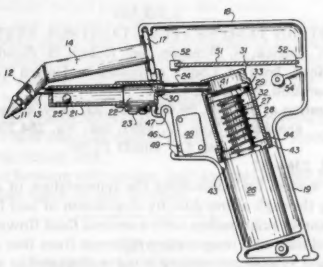
1. In a pistol holster, the improvement of lock-in means for the pistol comprising a flexible strap having one end attached to the front wall of said holster and extending over an opening in said front wall opposite the trigger guard of said pistol in said holster, a pin having one end fastened to said strap and extending through said trigger guard to the rear wall of said holster, and holding means affixed to said rear wall to receive the free end of said pin, said free end of said pin being released from said holding means by pulling the free end of said strap outwardly from said holster before drawing said pistol from said holster.

4,318,504

SUCTION TYPE DE-SOLDERING TOOL

George P. Rauchwerger, 147 Cromart Ct., Sunnyvale, Calif. 94086

Continuation-in-part of Ser. No. 809,090, Jun. 23, 1977, Pat. No. 4,206,864. This application Oct. 22, 1979, Ser. No. 86,651
The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.
Int. Cl.³ B23K *3/00*
U.S. Cl. 228—20 **7 Claims**



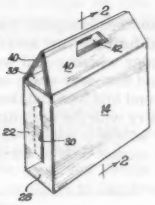
1. A desoldering tool comprising a casing formed with a handle, a hollow tip, support means on said casing supporting said tip, a suction tube connected to and communicating with said tip, means near said tip for heating said tip discrete from said suction tube, a cooling tube, said cooling tube being supported by said casing, said suction tube opening into the upper portion of the distal of said cooling tube, said cooling tube being of substantially greater cross-section than said suction tube and being thinwalled and of extended length so that molten solder sucked through said suction tube hardens into pellets in said cooling tube, means connected to said cooling tube having a removable cap to discharge solder pellets from said means, a cylinder in said handle having a head, said cooling tube extending transversely to said cylinder and said handle, a duct from the top of said cooling tube leading into said head, a piston reciprocable in said cylinder for drawing a vacuum through said duct, said cooling tube, said suction tube and said tip, said tip, suction tube, cooling tube, duct and head being in continuous communication with each other, actuating means to reciprocate said piston and manual means to actuate said actuating means.

4,318,505

DISPOSABLE SUITCASE

Charles E. Cordell, Jr., P.O. Box A, El Cajon, Calif. 92020

Filed Aug. 12, 1980, Ser. No. 177,484
Int. Cl.³ B65D *5/46*
U.S. Cl. 229—52 B **4 Claims**



1. A disposable suitcase comprising:
(a) an elongated rectangular bottom panel;
(b) first and second side panels extending from the longitudinal edges of said bottom panel;
(c) said first side panel having a pair of slotted end panels extending therefrom and foldable orthogonally thereto and said second side panels having extended end flaps foldable generally orthogonally thereto and engageable in the respective slots in said end panels;
(d) handgrip panels extending upward from the upper edges of said side panels and having hand holes therein such that when said end flaps are engaged in said slots, said handgrips can be brought together such that said holes align for carrying;
(e) said end flaps having extended tongues reverse foldable in said slots to define a positive locking mode; and
(f) said bottom panel defines end tabs foldable flush against said tongue when reverse-folded to hold in place whereby said slotted end panels and flaps freeing said handgrip panels from the burden of holding said side panels together.

4,318,506

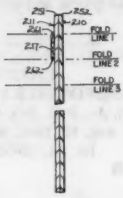
THREE-FOLD CLOSABLE POUCH

Arthur Hirsch, Elizabeth, N.J., assignor to Arvey Corporation, Chicago, Ill.

Filed May 27, 1980, Ser. No. 153,714
Int. Cl.³ B65D *33/16, 33/18, 33/20*
U.S. Cl. 229—62 **3 Claims**

1. A closable pouch comprising:
first and second opposing webs secured together at least partially around an interior portion of the webs;
said first web having at least one generally straight end edge defining a portion of the pouch opening;
said second web having at least one generally straight end edge oriented generally parallel to and in registry with said first web one generally straight end edge and being unsecured to said first web to provide an open mouth for said pouch; and
an adhesive sealing strip having a strip-like configuration

carried on said first web parallel with and spaced from said first web one generally straight end edge by an amount substantially equal to the width of said adhesive strip, said adhesive sealing strap having two generally parallel, straight margins, said adhesive sealing strip extending transversely across said first web, said adhesive sealing strip defining a closure first fold line along the margin of the strip that is parallel to and nearest said first web one generally straight end edge and defining a closure second fold line along the margin of the strip that is parallel to and furthest from said first web one generally straight end edge whereby said webs may be first folded away from said first web along said first fold line, then along said second fold line, and then along a third fold line that is in registry with the repositioned first fold line thus orienting the adhesive sealing strip against an adjacent region of the second web to form a closure seal in said pouch.

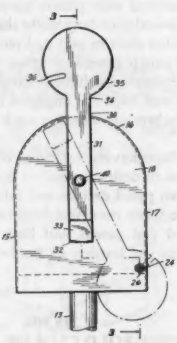


4,318,507

MAIL ARRIVAL FLAG SYSTEM

Floyd Thopsey, 214 E. Rocks Rd., Norwalk, Conn. 06851, and Anthony J. De Panfilis, 96 Silvermine Ave., Norwalk, Conn. 06850

Filed May 8, 1980, Ser. No. 147,957
Int. Cl.³ B65D *91/00*
U.S. Cl. 232—35 **1 Claim**



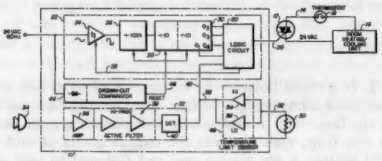
1. In an automatic signalling flag device for rural type mailboxes, said box having a hinged door at one end thereof, and a fixed vertical wall at an opposite end thereof, the improvement comprising: a relatively stiff wire slidably positioned within said box, said wire having a first end pivotally secured to an inner surface of said door, and a second end selectively projectable outwardly through an opening in said rear wall when said door is in closed condition; a signal element of generally elongated configuration having first and second ends, said first end having a weight thereon, said second end having a selectively displayed signal area thereon; pivot means penetrating said rear wall, and forming a pivot axis disposed above the point of projection of said wire through said rear wall, said signal element having a medially disposed opening penetrated by said pivot means, said second end having an open-ended slot selectively engageable with said second end of said wire which permits the end of the wire to engage the signal member at a point medially disposed with respect to its extremities; whereby upon the opening of said door, said signal element is released to cause said weight to rotate in a given direction to raise said signal area above said mail box, and after closing said door, said signal element might be manually rotated in the same direction to reengage said second end of said wire within said open-ended slot to position said signal area below said pivot means.

4,318,508

ROOM TEMPERATURE CONTROLLER

Norman B. Glasgow, Clearwater, and William E. Coleman, Jr., Largo, both of Fla., assignors to Sensatrol, Inc., Pinellas Park, Fla.

Filed Dec. 10, 1979, Ser. No. 102,118
Int. Cl.³ G05D *23/00*
U.S. Cl. 236—47 **20 Claims**



1. A control device for a room in which the temperature is controlled by an adjustable thermostat which controls heating and cooling apparatus comprising:

detection means disposed in the room for producing a control signal when the room is occupied;

control means connected to said detection means for enabling said thermostat in response to said control signal; and

timing means connected to said control means for causing said control means to disable said thermostat after a first preselected time period following an occurrence of said control signal and to disable said detection means for a second preselected time period following said first preselected time period, said second period short with respect to said first period.

4,318,509

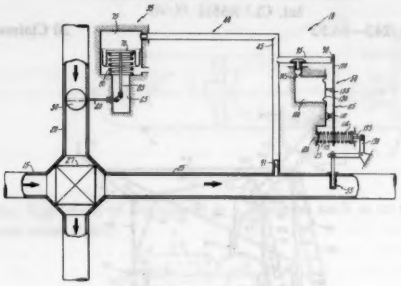
FLUID TEMPERATURE CONTROL SYSTEM

John P. Patrick, S. Windsor, and Robert B. Goodman, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 96,970, Nov. 23, 1979, abandoned. This application Apr. 15, 1981, Ser. No. 254,234
Int. Cl.³ G05D *23/08*
U.S. Cl. 236—87 **6 Claims**

1. A system for controlling the temperature of a first fluid flowing through a first duct by disposition of said first fluid in heat transfer relationship with a second fluid flowing through a second duct at a temperature different from that of said first fluid, said system comprising a valve disposed in said second duct for regulating the flow of fluid therethrough, an actuator operatively connected to said valve for the modulation thereof, said actuator communicating with, and being responsive to the pressure of a primary supply of servo fluid, said system further comprising a secondary supply of servo fluid of limited volume communicating directly with said primary servo fluid supply through a flow restrictor such that an adjusted change of said primary servo fluid pressure from steady state diminishes with time from the initiation thereof from an initial, greater value to a subsequent, lesser steady state value by way of delayed pressure equalizing flow between said primary and secondary supplies, thereby enhancing the transient

response of said control system and means responsive to the temperature of said first fluid for effecting said primary servo



fluid adjusted pressure change thereby effecting the operation of said actuator and the modulation of said valve.

4,318,510

WASHER SYSTEM FOR AN AUTOMOTIVE VEHICLE

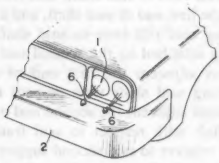
Kiyoshi Koike, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Nov. 15, 1979, Ser. No. 94,680

Claims priority, application Japan, Nov. 20, 1978, 53-159568[U]

Int. Cl.³ B60S *1/46*

U.S. Cl. 239—284 A **12 Claims**



1. A washer system for an automotive vehicle, comprising

a bumper fixed on the body of the automotive vehicle, said bumper having an inner space defined therein;

washer nozzle means provided on said bumper;

a washer tank for containing a washing liquid, the washer tank being positioned in the inner space of the bumper;

a washer pump for supplying the washing liquid from said washer tank to said washer nozzle means, the washer pump being placed in the bumper;

hose means connected via said washer pump between said washer tank and said washer nozzle means for feeding said washing liquid; and

means for housing said washer tank and said washer pump in the inner space of said bumper.

4,318,511

MATERIAL SPREADER DEVICE

Donald Y. Clark, R.R. #1, Central City, Merrick County, Nebr. 68826

Filed Oct. 1, 1980, Ser. No. 192,763

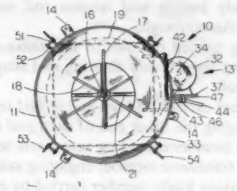
Int. Cl.³ B65G *65/32*

U.S. Cl. 239—684 **11 Claims**

1. A material spreader comprising:

a funnel-shaped chute for receiving gravity fed material and directing it downwards and having a shaft depending therefrom;

a pulley rotated spreader pan rotatably secured to said shaft, having a bottom substantially square in shape with rectangular side walls affixed normal to each side of said bottom with their long sides slightly shorter than and centered upon each of said sides of said bottom, whereby material entering said chute with a substantial horizontal element to its path of flight and retaining said horizontal element as it initially accumulates in said pan will remain there a



sufficient length of time to abort its horizontal momentum before being ejected through the four vertical openings between said four rectangular side walls; and,

power means for rotating said pulley rotated spreader pan about said shaft.

4,318,512

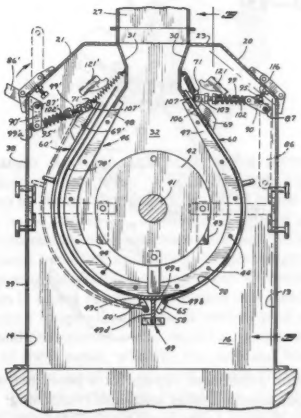
QUICK ACTION SCREEN LATCHING APPARATUS FOR HAMMERMILL

Howard C. Jacobson, St. Paul, and George R. Olson, Minnetonka, both of Minn., assignors to Jacobson Machine Works, Inc., Minneapolis, Minn.

Filed Oct. 26, 1978, Ser. No. 955,132

Int. Cl.³ B02C *13/04*

U.S. Cl. 241—73 **3 Claims**



1. A hammermill comprising a housing having a rotor with hammers thereon within the grinding chamber of said housing in which the improvement consists of a quick action screen latching apparatus, having in combination

a screen support means carried by said housing adjacent to said grinding chamber,

a screen carriage member carrying a screen,

said carriage member having a bottom cross member and a pair of side rail members with each having at their respective upper portions a pair of upwardly projecting rail guide members,

each of said rail guide members having a hook portion,

means pivotally supporting said carriage means to said housing,

an operating handle member,

an operating rod integral with said handle member extending transversely of said housing,

a pair of spaced tension link members adjacentto the inner side of each side wall of said housing being rigid with and carried by said operating rod,

a pair of tension rod members,

an adapter link carried by each of said tension link members respectively having said tension rod members slidably disposed therethrough,

a coil spring carried on each of said tension rod members, each spring respectively abutting said adapter links at one end thereof,

a stop member carried on each end of said tension rod members engaging the other end of each coil spring,

a transverse member extending across said tension rod members, said transverse member engaging said hook portions,

a screen carriage guide member carried by each side wall of said housing respectively receiving said rail guide members having the same pass therethrough, and

spring means carried by said housing retaining said transverse member in suspended position.

4,318,513

TENSION ADJUSTMENT SYSTEM OF THE PAPER BELT ON FEEDING UNITS OF PAPER MANUFACTURING MACHINES

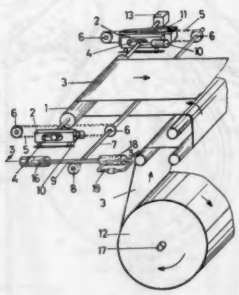
Manuel T. Martinez, Sancho el Fuerte, 21 Pamplona, Spain

Filed Jun. 19, 1980, Ser. No. 160,848

Claims priority, application Spain, Jun. 21, 1979, 481.772

Int. Cl.³ B65H *59/00*

U.S. Cl. 242—75.53 **8 Claims**



1. A tension adjustment system for a paper belt of feeding units in paper manufacturing machines comprising:

(a) a front floating roller having a shaft therein;

(b) a pair of displaceable trolleys each trolley having a groove therein;

(c) said shaft being slideably mounted in the respective grooves of said displaceable trolleys for displacement therein;

(d) means mounted on each said trolley for compensating displacements of said shaft occurring within the limits of said grooves; and

(e) said displaceable trolleys being displaceable in accordance with the presence of large variations in tension of said paper belt for control of said large variations, whereby small variations of paper tension are compensated within the displacement play of the shaft in the grooves of said trolleys without requiring the displacement of said trolleys.

4,318,514

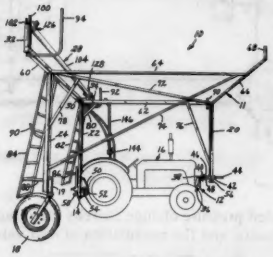
NETTING APPLICATOR

Wallace Weberg, R.R. #2, Welch, Minn. 55089

Filed Feb. 25, 1980, Ser. No. 123,998

Int. Cl.³ B65H *75/40*

U.S. Cl. 242—86.52 **20 Claims**



1. A net applicator apparatus for attachment to a self-propelled vehicle, said apparatus being adapted for laying a net onto agricultural plants to protect said plants from predators and for retracting said net from said plants, said net applicator apparatus comprising a frame, a plurality of supports attached to and supporting said frame, means for removably securing plurality of said supports to said vehicle, a wheel and means for attaching said wheel to one of said supports to supplement the movable support provided for said apparatus by said vehicle, a rotatable shaft having first and second ends and including means for locking a roll core with net thereon onto said shaft, said roll core locking means including a removable first means for clamping said roll core to said shaft, said first clamp means being attached to the first end of said shaft, and a second clamp means for clamping said roll core to said shaft, said second clamp means being attached to the second end of said shaft, first support means adjacent the first end of said shaft for releasably supporting said shaft with respect to said frame, second support means adjacent the second end of said shaft for supporting said shaft with respect to said frame, means for pivoting said shaft relative to said second support means to aid in mounting and dismounting said roll core, said pivot means being attached to the second end of said shaft, and power means for rotatably driving said shaft, said first support means including a U-shaped channel atop a support member for rotatable confinement of said shaft, said shaft being removed from said U-shaped channel by vertically raising said shaft, and said pivoting means including a universal joint, whereby to mount or dismount said roll core, the first end of said shaft may be lifted from said U-channel to pivot said shaft downwardly at said universal joint and said first clamp means being removable allowing removal or installation of said roll core.

4,318,515

GUIDANCE SYSTEMS

Stanley Leek, 8 Sunnyfield, The Ryde, Hatfield, Hertfordshire, England

Filed Sep. 11, 1968, Ser. No. 760,395

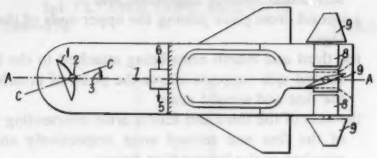
Claims priority, application United Kingdom, Sep. 11, 1967, 41447/67

Int. Cl.³ F41G *7/26*

U.S. Cl. 244—3.16 **11 Claims**

1. Apparatus for steering an aerial or space vehicle such as a missile, comprising means for deriving a first signal proportional to the rate of turn of the line of sight between the missile and a target, means for deriving a second signal proportional to the displacement angle between said line of sight and the missile longitudinal axis, means for deriving a third signal proportional to the angle between the longitudinal axis of the missile and the vector of the resultant of the forces acting thereon, and

means for algebraically summing these three signals to obtain an error signal which is applied to control means for adjusting

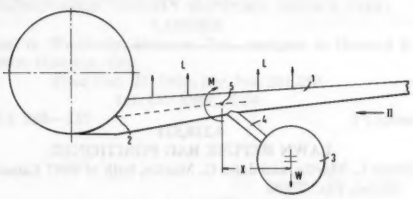


the flight path of the missile in a direction such as to reduce said error signal.

4,318,516
ATTACHMENT OF MASSES TO AIRCRAFT AND SPACECRAFT

Ronald A. Cole, Barnet, England, assignor to Greenmeadow Engineers Limited, Barnet, England

Filed May 30, 1979, Ser. No. 43,823
Claims priority, application United Kingdom, May 30, 1978, 24376/78
Int. Cl.³ B64D *27/00, 27/18*
U.S. Cl. 244—54 **13 Claims**



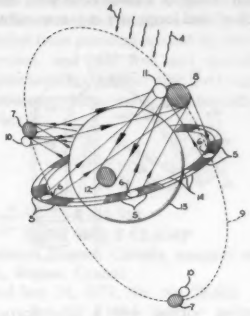
1. In an aircraft or a spacecraft, the improvement which comprises the combination of a wing, a pylon, and a mass secured to said wing by the pylon in a manner such that an imaginary line between the centre of gravity of the mass and the region of the wing to which the pylon is attached is at an angle to a vertical plane extending longitudinally of the aircraft or spacecraft when the aircraft or spacecraft is in straight, horizontal flight, so that the mass and the pylon apply a force and a moment to the wing, wherein the moment is applied to the wing so as to alleviate a moment in the wing produced by lift on the wing, and wherein the force and the moment are applied to the wing through two or more attachment members, with at least one attachment member applying only one of the force and the moment.

4,318,517
CLOSED SPACE STRUCTURES

Robert J. Salkeld, 266 Blood's Ridge Rd., Bear Valley, Calif. 95223, and Ralph C. Sklarew, 963 Dunlin, Westlake Village, Calif. 91366

Continuation of Ser. No. 817,150, Jul. 20, 1977, abandoned. This application Aug. 9, 1979, Ser. No. 65,335
Int. Cl.³ B64G *1/10*
U.S. Cl. 244—158 R **18 Claims**

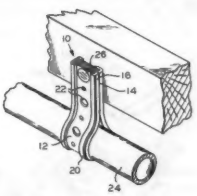
1. A non-rigid enclosed space structure elongated and closed upon itself in the form of a loop or belt, rotating in space in an orbit where the centrifugal forces are substantially counterbalanced by the gravitational forces, said space structure capable of conforming and adjusting to all forces of its own motion and all forces of other bodies.



4,318,518
INSULATED HANGER STRAP

Lynwood A. Davis, 15034 Ida West Rd., Petersburg, Mich. 49270

Filed Mar. 20, 1980, Ser. No. 132,256
Int. Cl.³ E21F *17/02*
U.S. Cl. 248—60 **1 Claim**



1. A hanger strap for supporting objects comprising an elongate strip of sheet metal of sufficient flexibility to permit said strip to be readily deformed to conform to the contour of an object to be supported; an elongate strip of elastomeric material coterminous with said metal strip, said strip of elastomeric material including upstanding flanges integrally formed on the opposing longitudinal edges thereof, channels formed in said flanges in facing relationship to each other and parallel to the respective longitudinal edges of said strip of elastomeric material, and constructed and arranged to receive the edges of said strip of sheet metal, whereby one side and both edges of said strip of sheet metal are covered by said elastomeric strip; said strip of sheet metal only including a plurality of space apart apertures formed therein, having a plurality of sizes, said strip of elastomeric material being imperforate.

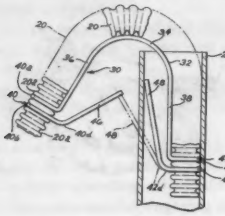
4,318,519
WASHING MACHINE HOSE GUIDE

Theodore J. Blevins, Prospect, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sep. 7, 1979, Ser. No. 73,406
Int. Cl.³ B22D *27/02*
U.S. Cl. 248—79 **3 Claims**

1. A hose clamp for removably securing a corrugated drain hose to a generally vertical wall of a fluid receptacle; said clamp comprising a continuous piece of wire having a central hose supporting portion formed with a pair of elongated legs connected by a reversely bent section; an open-ended hose retaining loop formed at the distal end of each leg, each of said

loops being generally C-shaped and comprising a pair of interconnected spaced apart turns of wire, each of said loops extending generally transverse to the axis of its adjacent leg for attaching said clamp to a drain hose with the hose extending through each of said loops and in juxtaposition to said central



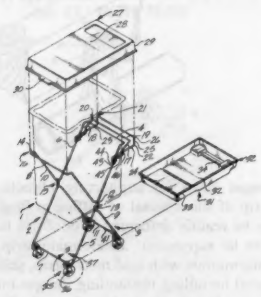
hose supporting portion with a hose corrugation received between said spaced apart turns of wire; and a support engagement finger projecting inwardly from each of said loops and angled toward said reversing bent section for removably mounting said clamp to a generally vertical wall.

4,318,520

HINGED COVER UNIT WITH INTEGRAL HANDLE AND REMOVABLE SHELF FOR COLLAPSIBLE STAND

Ronnie H. Walker, Cypress, Calif., assignor to Acme Wire Products Corp., Garden Grove, Calif.

Filed May 29, 1980, Ser. No. 154,474
Int. Cl.³ A63B *55/04*
U.S. Cl. 248—97 **19 Claims**



19. A collapsible, portable stand for supporting a flexible bag or the like comprising:

a first wire-formed elongated loop of generally rectangular configuration having a bottom cross bar, first and second side supports, and a top cross bar;

a second wire-formed elongated loop of generally rectangular configuration intersecting the first loop along the direction of elongation and having a bottom cross bar, third and fourth side supports, and a top cross bar; and

means for attaching the first and second loops at their points of intersection to permit the limited rotation of the loops with respect to one another allowing the stand to be selectively erected or collapsed;

a first hinge element comprising:

a pair of first and second mutually parallel arms, one arm being attached to each first and second side supports, the arms extending horizontally out from, up from, and diagonally out from the side supports; and

a first cross piece joining the ends of the arms opposite the ends of attachment to the side supports;

a second hinge element comprising:

a pair of third and fourth mutually parallel L-shaped arms;

a first leg of one L-shaped arm being attached to each of the first and second side supports;

a second leg of each L-shaped arm extending upwardly in substantial vertical alignment; and

a second cross piece joining the upper ends of the second legs;

the third and fourth arms being attached to the first and second side supports above the point of attachment of the first and second arms;

the axes of the third and fourth arms intersecting the axes of the first and second arms respectively and being attached at the intersection points;

the first cross piece being disposed intermediately between the second cross piece and the top cross bar of the first loop, and being substantially parallel to both;

two pair of casters, one pair being attached to the bottom cross bar of the first loop in spaced relation to each other, the second pair being attached to the bottom cross bar of the second loop in spaced relation to each other;

a cover having a rectangular central portion, circumscribed at least in part by a rim which is approximately perpendicular to the central portion, the cover being dimensioned such that the rim extends over the top cross bar of each loop and the first hinge element; and

the first and second hinge elements cooperatively supporting the cover in a substantially vertical plane when the cover is pivoted to an elevated position; and

a removable rectangular shelf supported by the two bottom cross bars and adapted to support the bottom of the bag.

4,318,521

LAWN REFUSE BAG POSITIONER

Emma L. Martin, and John G. Martin, both of 9847 Estate La., Dallas, Tex. 75238

Filed Jul. 25, 1979, Ser. No. 60,784
Int. Cl.³ B65B *67/12*
U.S. Cl. 248—99 **4 Claims**

1. A refuse bag unit, comprising:

a. a continuous D-shaped form having a central opening about the size of the opening of a refuse bag,

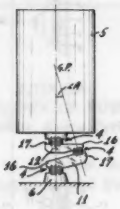
b. a refuse bag in said central opening and supported from said form, and

c. means on said form to permit a worker to hold said form in an upright manner to expose the opening of said refuse bag adjacent the ground to receive refuse at the ground level, wherein said continuous form includes spike means normally substantially contained within the D-shaped form for permitting said form to stand alone upon insertion of said spike means into the ground when said spike means are activated.

4,318,522
GIMBAL MECHANISM

Walter T. Appleberry, Long Beach, Calif., assignor to Rockwell International Corporation, Downey, Calif.

Filed May 1, 1979, Ser. No. 35,121
Int. Cl.[3] A45B *19/04*; A47J *47/16*
U.S. Cl. 248—178 9 Claims

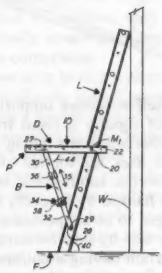


1. An article positioning apparatus comprising:
a mounting base, and
an angulated crank having first and second crank shafts, said first crank shaft rotatably attaching said angulated crank to said mounting base, said second crank shaft rotatably attaching said article to said crank, the axes of said crank shafts being non-parallel and intersecting at a point near the center of mass of said article.

4,318,523
REMOVABLE UTILITY SUPPORT DEVICE FOR LADDER

Michael A. Weatherly, Houston, Tex., assignor to Howard E. Stuller, Houston, Tex.

Filed Oct. 27, 1980, Ser. No. 201,250
Int. Cl.[3] E06C *7/14*
U.S. Cl. 248—210 9 Claims

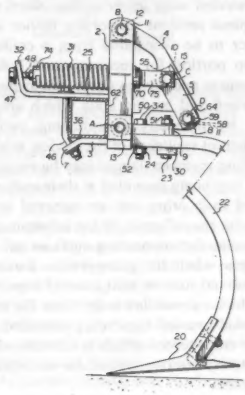


1. A utility support device for use with a hollow rung ladder for supporting paint containers, materials, tools or the like at a side of a leg of the ladder comprising:
a support member;
an inflexible brace member, having a first end and a second end, connected to said support member at said first end and movable to various angular positions with respect to said support member;
a first mounting means connected to said support member and extending therefrom, adapted for providing a support mounting for said support member at the side of the ladder leg by engaging a first hollow rung of the ladder;
a second mounting means connected to said brace means at said second end, extending therefrom in a plane substantially parallel to said first mounting means, and adapted for providing a support mounting for said brace member at the side of the ladder by engaging a second hollow rung of the ladder;
means for selectively fixing the angular position of said brace member with respect to said support member; and
wherein said brace member is adapted for preventing said support member from pivoting around the axis of said first mounting means, and said first and second mounting means are substantially coplanar with the longitudinal axis of the ladder to provide a stable, substantially horizontal support device.

4,318,524
BENT BOLT CLAMP

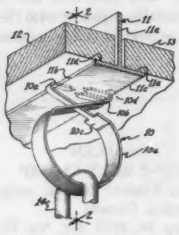
Wilfred J. Degelman, Regina, Canada, assignor to Degelman Industries Ltd., Regina, Canada

Filed Sep. 24, 1979, Ser. No. 78,601
Int. Cl.[3] F16M *13/00*
U.S. Cl. 248—214 3 Claims



1. A clamping arrangement for clamping an implement to a beam of rectangular cross-section, said clamping arrangement comprising:
a first beam-engaging element for engaging a first face of the beam;
a second beam-engaging element for engaging a second face of the beam;
a third beam-engaging element having a beam-engaging face for engaging a third face of the beam and a contiguous flanged portion at the free extremity of the beam-engaging face and lying at an acute angle thereto;
the first, second and third beam-engaging elements lying substantially in a plane and arranged to form a U-shaped configuration snugly fitting the said three faces of the beam, the second beam-engaging element being located at the trough of the U, and the flanged portion of the third beam-engaging element forming an outwardly flared free end of the U; and
at least one bent bolt connectable at right angles to the first beam-engaging element and having a first straight portion extending from the first beam-engaging element parallel to the second beam-engaging element for engaging the fourth face of the beam, a bent portion for bending around the corner at which the third and fourth faces of the beam meet, and a second straight portion extending from the bent portion substantially perpendicular to the flanged portion of the third beam-engaging element and connectable thereto.

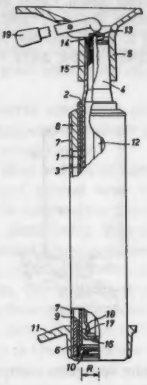
4,318,525
SUPPORTING DEVICE
Jan Welch, P.O. Box 992, Winter Park, Fla. 32790
Filed Dec. 3, 1979, Ser. No. 99,465
Int. Cl.³ F16M 13/00
U.S. Cl. 248—228 2 Claims



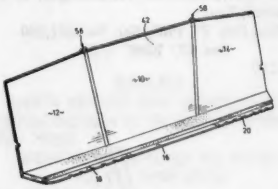
1. For use as a ceiling support in cooperation with a ceiling panel supporting member having oppositely extending flanges which are provided with upper ceiling panel supporting surfaces, a one-piece resilient supporting device adapted to support an object to be suspended from a ceiling, said device having a loop portion for receiving and holding an object supporting element and having cross legs formed integral with said loop portion and having ends which are adapted to be spread apart by manually compressing said loop portion against the inherent resilience of the device, whereby the edges of the supporting member flanges may be received within said leg ends, said legs being provided at their ends with tips which extend toward each other and are adapted to move toward each other under the influence of the inherent resiliency of the device to overlie the supporting surfaces of the supporting member flanges when the compression force on said loop portion is removed, one of said crossed legs being provided with a slot which extends inwardly from the end thereof and the other of said crossed legs being provided with a tongue portion at the end thereof which is movably disposed within said slot, whereby relative transverse movement of said leg ends is prevented.

4,318,526
ADJUSTABLE TELESCOPIC DEVICE
Per G. Werner, N-1460 Spro, Norway
Filed Sep. 6, 1979, Ser. No. 72,635
Claims priority, application Norway, Sep. 13, 1978, 783089
Int. Cl.³ F16M 11/26
U.S. Cl. 248—412 5 Claims

1. Adjustable telescopic device designed for substantially vertical mounting, in which an inner tube is slidably inserted in an outer tube and projects upwards from the same and is adapted to carry a load, for example from a chair seat, and to be locked at its lower end to the outer tube by frictional action of rolling elements, which by means of a spring loaded supporting element are pressed up between an inner face of the outer tube and downwardly tapering contacting faces of the inner tube so as to be wedged therebetween, wherein said inner face has a prescribed curved contour in cros-section taken transversely of said outer tube, and wherein said inner tube can be released by manual actuation of the supporting element against the spring load, said device being characterized in that the rolling elements comprise plural rollers, each having a circumferential face which is shaped with a generatrix corresponding to said prescribed curved contour of the inner face of the outer tube.



4,318,527
COLLAPSIBLE SUPPORT STRUCTURES
Donald B. Smith, R.R. No. 1, Mount Brydges, Ontario, Canada N0L 1W0
Filed May 28, 1980, Ser. No. 154,083
Int. Cl.³ F21K 2/21
U.S. Cl. 248—459 12 Claims



1. In a collapsible self-sustaining support structure having a substantial measure of rigidity derived from sheetlike panel portions hingedly interconnected along common abutting edges to define fold axes for limited swinging movement towards and away from one another, said structure including a central panel portion flanked by hingedly interconnected side panel portions arranged to be supported in substantially fully extended upstanding side-by-side forwardly facing relation, said central panel portion having a uniform generally quadrilateral perimetral configuration with its uppermost edge having an extent greater than the extent of its lowermost edge, said central panel portion and said side panel portions flanking same each presenting hingedly interconnected ledge panel portions along their respective lowermost edges in side-by-side relation, the configuration of the lowermost edges of said central and side panel portions being such that said hingedly interconnected ledge panel portions are foldable in unison into a generally horizontal disposition only when said aforementioned central and side panel portions are in substantially fully extended side-by-side relation, a second central panel portion having a uniform generally quadrilateral perimetral configuration adapted to swing from a position next adjacent said first mentioned panel portion rearwardly therefrom to support same in upstanding relation and gusset panel portions hingedly interconnected between each of said flanking side panel portions and said second mentioned central panel portion and of an extent whereby with said first mentioned central and side

panel portions arranged in substantially fully extended upstanding side-by-side forwardly facing relation the folding in unison of said hingedly interconnected ledge panel portions into a generally horizontal disposition secures said panels against further relative displacement.

4,318,528

MOUNTING DEVICE FOR PLATES

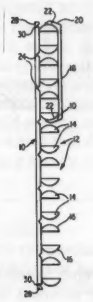
Charles E. Dobson, Rambles, Knote Park, Almondsbury, Bristol, England

Filed Oct. 15, 1979, Ser. No. 84,575

Claims priority, application United Kingdom, Oct. 19, 1978, 41233/78

Int. Cl.³ G09F 7/18

U.S. Cl. 248—475 R 4 Claims



1. A mounting device for use in mounting to a support surface a plate which is provided with rearwardly directed flanges having mutually convergent portions on their facing surfaces, the device comprising:

(i) an elongate base strip having a plurality of heads projecting therefrom uniformly spaced apart along the strip, each head comprising a spaced pair of elements having mutually divergent portions on their surfaces remote from each other, whereby a said plate can be mounted to the device by resiliently pushing the plate flanges over two said elements on the strip, the mutually convergent portions of the flanges being retained by the mutually divergent portions of the elements; the strip having lines of weakening between adjacent heads whereby portions of the strip having one or more complete heads can be broken therefrom; the strip being provided at its ends with a projecting spacer portion whereby when a strip end is mounted end-to-end with a broken-off portion of a strip, with the spacer portion abutting the edge formed by the fracture at the line of weakening, the spacing of the adjacent heads on either side of the join is the same as the uniform spacing of the heads along a strip; the strip extending at each longitudinal side beyond the heads to provide side flanges; and

(ii) a channel member having mutually inturned lips, into which channel member the base strip is longitudinally slidable, the side flanges being retained by the inturned lips at the mouth of the channel, the heads projecting through the mouth of the channel;

whereby the channel can be mounted to a said support, and a plurality of strips or broken-off portions of strips can be fitted into the channel abutting edge-to-edge to receive one or more said plates.

4,318,529

ACTUATING APPARATUS FOR ADJUSTING A MOVABLE ELEMENT, PARTICULARLY THE CLOSURE MEMBER OF A VALVE

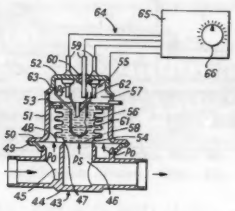
Zbigniew R. Huelle, Sonderborg, and Leif Nielsen, Nordborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Division of Ser. No. 956,573, Nov. 1, 1978, Pat. No. 4,258,899. This application Dec. 8, 1980, Ser. No. 214,568

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1977, 2749252

Int. Cl.³ F16K 31/02; F03G 7/06

U.S. Cl. 251—11 2 Claims



1. A valve assembly, comprising a housing defining an inlet and outlet and a valve opening therebetween, said housing defining a central tube section having communication with said outlet and a surrounding annular section having communication with said inlet, said tube and annular sections having inner and outer openings defined in a common plane, said housing defining a main chamber above said common plane, a flat circularly shaped diaphragm forming a movable wall for said main chamber and having an unstressed position in said plane in closing relation to said openings with the periphery thereof being attached to said housing in proximity to the periphery of said annular section opening, a bellows in said main chamber defining with said housing an expansible control chamber, said bellows having a movable end engaging said diaphragm and a fixed end attached to said housing, a liquid/vapor type filling for said control chamber biasing said diaphragm in an expanding direction, electric heating means in said control chamber, electric type temperature responsive feedback means in said control chamber, electric contact means extending from outside said housing to the interior of said control chamber connected to said heating means, and said feedback means, adjustable control means connected to said heating means and said temperature responsive feedback means via said contact means, for operating said heating means responsive to said feedback means to maintain a selected predetermined vapor pressure in said chamber, said liquid/vapor filling being pressurizable by heat to provide an oppositely acting counter-force relative to the pressures in said inlet and said outlet to cause said diaphragm to assume intermediate positions of stable equilibrium corresponding to a range of pressures in said control chamber.

4,318,530

VALVE MECHANISM WITH CONTROLLED OPENING MEANS

Per O. Lissmyr, Box 132, S-792 01 Mora, and Sven Hagliöf, Torrkittvägen 3, S-792 00 Mora, both of Sweden

Filed Nov. 21, 1979, Ser. No. 96,602

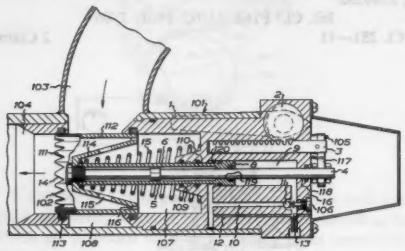
Claims priority, application Switzerland, Nov. 22, 1978, 7812018

Int. Cl.³ F16K 31/143

U.S. Cl. 251—54 10 Claims

1. A valve mechanism in which the travel of a valve body regulating the passage through a valve housing, from the inlet to the outlet thereof, and adapted to be displaced in a valve chamber, is positively controlled by means controlling the

velocity of the valve body, wherein the valve body (102) includes a valve means (112) regulating the passage through the valve housing (101) and piston means (6, 8) rigidly connected to said valve body and is displaceable by fluid pressure at the outlet side of the valve body, the valve body (102) is rigidly connected with hydraulic damping control means (8–13) which is provided with a throttle means and which permits controlled motion of the valve body in the opening direction, and a manually operable adjusting means (1, 2, 3, 4 and 5) is adapted to effect initial displacement of the valve



body a short distance from the position where it completely shuts off the valve passage, in order to allow restricted throughflow of medium to the outlet side of the valve body and a build-up of pressure at this side, which thereupon successively displaces the valve body in the opening direction, and the piston includes a first portion sealingly disposed in a damping control cylinder (9) and a second portion being exposed to the build-up pressure at the outlet side of the valve body after said adjusting means engages said piston means to effect said initial displacement.

4,318,531

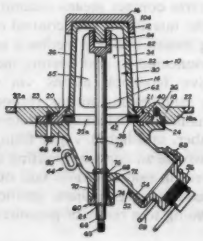
LOW PROFILE CONE VALVE ASSEMBLY

Edwin S. Carlson, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Mar. 26, 1980, Ser. No. 134,231

Int. Cl.³ F16K *5/02*

U.S. Cl. 251—144 **10 Claims**



1. A container outlet valve assembly comprising: a container mounting flange located in the container bottom; a generally cone shaped housing extending upwardly into the container and having a housing flange portion extending into said container mounting flange; said housing further including radially spaced outer openings for lading to flow out of the container; bearing means connected to said housing flange portion and extending inwardly from said flange portion a relatively short distance; a cone valve located within said housing and being movable upon said bearing means; said cone valve containing spaced cone valve openings which align with the outer openings in the cone housing when the cone valve is in open position; a liner of low friction material attached to one of the outer surfaces of the cone valve and/or the inner surface of the cone housing and effecting a seal between said housing and said cone valve; said cone valve being rotatable upon said bearing means from said open position to a closed position in which the valve body closes the openings located in the cone valve housing; said cone valve having a hollow center portion in communication with said cone valve openings and having a bottom opening; an unloading chamber located below the cone valve and attached to said container mounting flange with fasteners which define a shear plane between said outlet chamber and said mounting flange.

4,318,532

HIGH VACUUM VALVE HAVING A METAL-TO-METAL SEALING JOINT

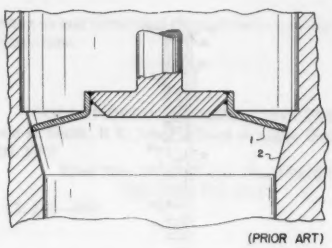
Otto Winkler, Balzers, Liechtenstein, assignor to Balzers Aktiengesellschaft, Liechtenstein

Filed Jan. 28, 1980, Ser. No. 115,730

Claims priority, application Switzerland, Feb. 1, 1979, 965/79

Int. Cl.³ F16K *1/34*

U.S. Cl. 251—334 **17 Claims**



(PRIOR ART)

1. A high vacuum valve, comprising a valve housing, an annular spring member mounted in said housing having an outer peripheral portion secured to said housing and a central opening and a peripheral inner sealing edge face bounding the opening and defining a valve seat about said sealing edge face, a valve member movably mounted in said housing for movement toward and away from said central opening, an annular spring cup having an inner periphery secured to said valve member and an outer periphery defining a stop portion engageable with said valve seat to close said central opening, each of said spring cup and said spring member being conically shaped and concentrically arranged in respect to each other, said stop portion including a sealing face extending substantially normal to the generatrix defining the conical shape of said spring cup, and means for radially displacing one of said sealing face and said sealing edge face into sealing engagement with each other.

4,318,533

APPARATUS FOR MAINTAINING TENSION ON A TENSION CABLE

Walter Port, Würzenbachstrasse 69, St. Ingbert-Reichenbrunn-/Saar, Fed. Rep. of Germany 6670

Filed Jul. 19, 1979, Ser. No. 58,854

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1978, 2832567

Int. Cl.³ B66D *1/50*

U.S. Cl. 254—273 **6 Claims**

1. An apparatus for maintaining a continuous tension on a tension cable which is connected to a position varying object independently of the cable force, especially for the indirect tensioning of a power cable leading to a coal extracting machine travelling back and forth, the apparatus comprising:

(a) a winding drum for receiving one end of the tension cable;

(b) means operatively connected to said drum for selectively

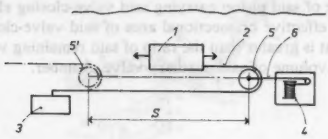
driving said drum in either the forward or reverse direction, or holding said drum in a rest position;

(c) means for controlling the speed and direction of rotation of said driving means;

(d) tensioning means for exerting a counter-tension on the tension cable;

(e) means for sensing the tension in the cable and moving in relation to changes in the magnitude and direction of the tension on the cable;

(f) means for biasing connected to said sensing means for providing a desired tension on the cable, said biasing means having a predetermined force such that said sensing



means assumes an equilibrium position when the tension force exerted by said driving means on the cable is equal to the counter-tension exerted by the tensioning means to insure that the cable is continuously under tension even when said drive means is at rest; and

(g) said sensing means being connected to said controlling means to regulate the direction and speed of rotating of said driving means in response to positional changes in the sensing means so that said sensing means is returned to the equilibrium position in which said driving means is in said rest position, delivering a steady torque to maintain said equilibrium position.

4,318,534

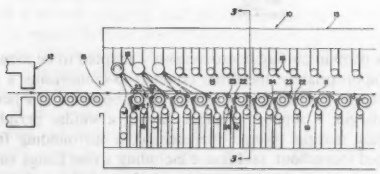
PLATE QUENCH

William L. Thome, Toledo, Ohio, and Robert A. Schmall, Temperance, Mich., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Oct. 9, 1980, Ser. No. 195,537

Int. Cl.³ C21D 9/56

U.S. Cl. 266—113 **7 Claims**



1. An apparatus for quenching a heated element, such as a metal plate comprising:

(a) a horizontally elongated chamber having entrance and exit openings through which the element enters and leaves the chamber;

(b) means for guiding the element along a substantially horizontal pathway through the chamber between the openings, said means including a plurality of transversely oriented rows of rollers for supporting the element, each row of the plurality of rows of rollers comprising a number of individual tire-like rollers which are parallel and rotatable about a common axis that is normal to the direction of travel of the element, the individual rollers each creating a wake downstream therebehind as they are contacted by liquid used to quench the element, the wakes preventing adequate liquid from contacting and uniformly quenching the element;

(c) a plurality of transversely oriented rows of nozzles located above and below the pathway for impinging quenching liquid against the element as it travels along the pathway, the rows of nozzles located below the pathway including, (i) a first series of nozzles located upstream closely in front of the individual rollers, relative to the direction of travel of the element, at least adjacent the entrance opening, to direct relatively high velocity streams of liquid downstream slightly in front of and aside the adjacent downstream rollers to reduce and restrict the wakes to a smaller area immediately downstream behind the rollers, and (ii) a second series of nozzles positioned downstream closely behind the individual rollers, at least adjacent the entrance opening, to direct relatively low velocity streams of liquid generally upstream into the smaller areas defined by the reduced wakes downstream behind the rollers to eliminate or substantially reduce the wakes, thereby producing more uniform quenching of the element.

4,318,535

REAR WHEEL SUSPENSION FOR MOTORCYCLES

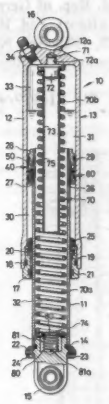
Kiyonori Imai, Gifu, Japan, assignor to Kayabakogyokabushikikaisha, Tokyo, Japan

Filed Oct. 12, 1979, Ser. No. 84,176

Claims priority, application Japan, Oct. 14, 1978, 53-140990[U]

Int. Cl.³ F16F 9/19; B60G 11/56

U.S. Cl. 267—8 R **4 Claims**



1. Wheel suspension for motorcycles including an oleopneumatic shock absorber, comprising

an outer tube having a closed outer end and an inner end;

an inner tube having a closed outer end and an inner end and mounted for telescopic movement within said outer tube through said inner end of said outer tube;

a spring guide means secured to said closed outer end of said outer tube and extending into said inner end of said inner tube;

a suspension coil spring extending from said closed outer end of said outer tube around said spring guide means to the closed outer end of said inner tube;

the pitch diameter of a first part of said suspension coil spring located in said outer tube and around said spring guide means under the maximum extended telescopic position of said shock absorber being smaller than the pitch diameter of a second part of said suspension coil spring located in said inner tube to prevent the inner end of said inner tube from impinging on said coil spring;

a flow passage provided by said inner end of said inner tube and being of sufficient diameter to prevent the first part of said suspension coil spring of said smaller pitch diameter

located within said inner tube from substantially reducing oil flow through said passage during telescopic movement of said shock absorber, the outer diameter of said smaller pitch diameter part of said coil spring being spaced from the inner surface of said inner tube defining said passage to allow substantially unimpeded flow of oil through said passage;

an oil damping device mounted on said inner tube adjacent said inner end thereof and communicating with said passage; and

a freely rotatable damping force adjusting device secured to said inner tube adjacent its said inner end; said devices separating the enclosed space defined by said outer tube into a first oil chamber and a second oil chamber;

said first oil chamber being the space in said outer tube between said closed outer end thereof and said devices and the inside of said inner tube, said second oil chamber being the space bounded between the inner and outer tubes, the devices, and the inner end of the outer tube, said devices allowing substantially free flow of oil through said passage from said first oil chamber into said second oil chamber during the compression stroke of said shock absorber while exerting a substantial damping force during the extension stroke of said shock absorber, said damping force during the extension stroke being proportional to the extension stroke speed.

4,318,536

AXIALLY ADJUSTABLE PNEUMATIC SPRING

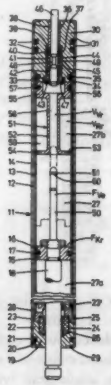
Fritz Bauer, Altdorf, Fed. Rep. of Germany, assignor to Fritz Bauer & Söhne oHG, Altdorf, Fed. Rep. of Germany

Filed Jan. 23, 1980, Ser. No. 114,652

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907100

Int. Cl.³ F16F 9/48

U.S. Cl. 267—64.12 **5 Claims**



1. A pneumatic spring, including a housing having first and second ends and consisting of an inner tube coaxially residing within an outer tube, said tubes together defining a cylindrical channel, and further including a piston having an end face and sealingly guided in said inner tube and attached to a piston rod which sealingly emerges from said first end of said housing through a sealing plug, and further including valve means disposed at and sealing the second end of said housing, said valve means including an axially displaceable plunger for controlling communication between the interior volume of said inner tube and said cylindrical channel, and wherein there are provided auxiliary pneumatic means for inhiting inward movement of said piston rod as said piston approaches said valve means, said auxiliary pneumatic means comprising:

an auxiliary valve chamber having a central bore and a coaxial chamber separated from said central bore, said auxiliary valve chamber being located in said inner tube between said valve means and said piston;

a valve-closing element disposed on the end face of said piston remote from said piston rod, for entering said auxiliary valve chamber and sealing it to define a volume downstream thereof in said auxiliary valve chamber and a volume upstream thereof; said coaxial chamber being in communication with the interior volume of said inner tube, and

the relative dimensions of said auxiliary valve chamber and of said valve-closing element are such that when said auxiliary valve chamber is closed by said valve-closing element, the ratio of the effective annular area of the end face of said piston carrying said valve-closing element to the effective crossectional area of said valve-closing element is greater than the ratio of said remaining volume to the volume of said auxiliary valve chamber.

4,318,537

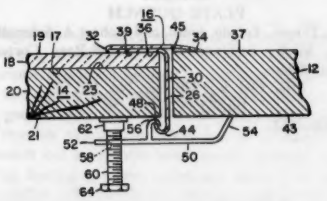
CUTTING SURFACE ASSEMBLY

William H. Dorman, Corning, and Jerome J. Smith, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jun. 23, 1980, Ser. No. 162,019

Int. Cl.³ B23Q 3/00

U.S. Cl. 269—302.1 **6 Claims**



1. A drop-in cutting board assembly adapted to be mounted in an appropriately apertured countertop comprising: a relatively hard vitreous cutting surface being bounded by a peripheral margin; a support member having a similar peripheral bounding margin layered therebehind; a surrounding frame mounted thereabout, said frame including a first flange engaging an outwardly facing portion of the cutting surface and overlapping the entire peripheral margin thereof forming a first bearing surface thereagainst and adapted to engage an outwardly facing portion of the countertop entirely along a bounding peripheral margin of the aperture when the assembly is dropped therein, an annular band portion extending distally from the first flange, and a second flange integral with said band portion, said second flange forming a second bearing surface for overlapping a portion of the peripheral margin of the backing member and engaging a rearward surface of the backing member in opposition to the first bearing surface of the first flange to secure the layered cutting surface and backing member therebetween, and a channel member integral with said annular band extending beyond the rearward surface of the backing member; and anchoring means adapted to pivotally engage the channel member having opposed free arm extending therefrom for respectively engaging rearward portions of each of a backing member and the countertop for securing the assembly within the aperture.

4,318,538

COUNTERBALANCED SUPPORT

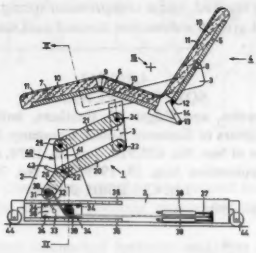
Jozef T. A. Janssen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 27, 1980, Ser. No. 125,078

Claims priority, application Netherlands, Feb. 28, 1979, 7901575

Int. Cl.[3] A61G *13/00*

U.S. Cl. 269—324 6 Claims



1. An adjustable support comprising:

a base;

a parallelogram linkage;

a supporting frame, movably connected to the base by means of the parallelogram linkage; and

means for applying a constant counterbalancing force at a point on the arm, said force being directed transverse to each of the pivotal axes of the coupling rods and in a direction which is at a first fixed angle with respect to the vertical;

wherein the parallelogram linkage comprises:

(i) a first coupling rod, pivotable relative to the base around a first axis and pivotable relative to the supporting frame around a second axis, said first coupling rod having an arm; and

(ii) a second coupling rod, pivotable relative to the base around a third axis and pivotable relative to the supporting frame around a fourth axis, said second coupling rod being parallel to the first coupling rod;

(iii) said first, second, third, and fourth axes being parallel to each other;

wherein the supplement of the first fixed angle is substantially equal to a second fixed angle between a first line, which connects the point at which the force acts on the arm to the first axis, and a second line, which connects the first and second axes;

wherein the supplement of the first fixed angle is also substantially equal to a third angle between a third line, which connects the second and fourth axes, and a fourth line, which connects the fourth axis to a common center of gravity of the supporting frame and a load support thereon; and

wherein the ratio of the length of the first line to the length of the second line is equal to the ratio of the length of the third line to the length of the fourth line;

characterized in that;

the means for applying the counterbalancing force comprise:

a pneumatic pulling device; and

a carriage, displaceable on the base in a direction transverse to the pivotal axes of the coupling rods;

said pulling device interconnecting the carriage and the arm at the point of application of the counterbalancing force on the arm.

4,318,539

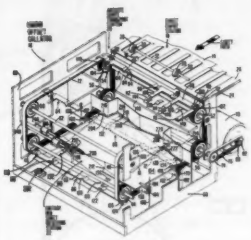
APPARATUS FOR AND METHOD OF COLLATING SORTING AND STACKING SHEETS CONCURRENTLY

Richard A. Lamos, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 4,773, Jan. 19, 1979, abandoned, which is a continuation-in-part of Ser. No. 856,551, Dec. 1, 1977, abandoned. This application Nov. 7, 1980, Ser. No. 205,061

Int. Cl.[3] B65H *39/06, 29/58*

U.S. Cl. 270—58 30 Claims



18. Apparatus for collating sequentially supplied sheets into plural discrete sets in a "unibin" receiver, comprising:

offsetting means for engaging each of said sequentially supplied sheets and offsetting each sheet with respect to the immediately preceding sheet;

insertion means for sequentially inserting said offset sheets from said offsetting means in said "unibin" receiver to form a single stack with the sets being in face-to-face contact and for retaining said offset; and

separation means at said "unibin" receiver for engaging said inserted offset sheets and separating differently offset adjacent sheets of said single stack for insertion by said insertion means of a further sequentially supplied offset sheet therebetween.

24. The method of collating supplied sheets into a plural number of discrete sets comprising the steps of:

(1) stacking in a differently offset position from each adjacent sheet, all in a single stack, a number of said supplied sheets equal to the number of said discrete sets with the sets being in face-to-face contact;

(2) separating said differently offset adjacent sheets of said single stack;

(3) inserting a supplied sheet between each said separated differently offset adjacent sheets of said single stack and at one end of said stack, each inserted sheet offset identically to one of said adjacent sheets, the number of said inserted sheets being equal to the number of said discrete sets; and

(4) repeating steps (2) and (3) until the last of said supplied sheets has been inserted, each group of adjacent said sheets having the identical offset comprising one of said discrete sets.

4,318,540

CONSTANT SPACING DOCUMENT FEEDER

Eugene E. Paananen, Brighton, Mich.; Mark S. Casper, Williamsville, N.Y., and Chung H. Peng, Woodhaven, Mich., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 942,469, Sep. 14, 1978, abandoned. This application Jan. 14, 1980, Ser. No. 111,804

Int. Cl.[3] B65H *3/04, 7/18*

U.S. Cl. 271—4 6 Claims

1. A document feeding mechanism for feeding a plurality of documents having variable lengths in a serial stream comprising:

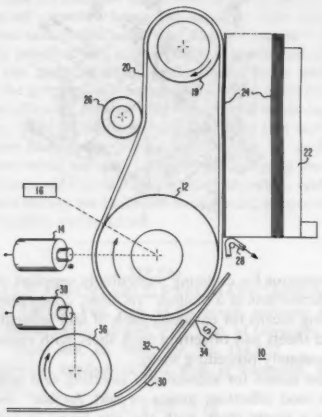
a hopper for storing the documents in a stacked relation adjacent a transport path in the feeding mechanism;

transport drive means for moving documents in a serial stream along the transport path at a transport velocity;

feed drive means for moving documents in a serial stream along the transport path, said feed drive means positioned adjacent said hopper;

sensor means positioned intermediate said feed drive means and said transport drive means for detecting the trailing edge of a document in the transport path;

speed control means for operating said feed drive means at the transport velocity and at a feed velocity, the transport velocity being substantially higher than the feed velocity;



logic means responsive to said sensor means for signaling said speed control means to operate the feed drive means at said feed velocity for a first predetermined time period after said sensor means has detected the trailing edge of a document and then signaling the speed control means to operate the feed drive means at the transport velocity, whereby the space between adjacent documents is increased to a predetermined spacing and said spacing is thereafter maintained substantially constant.

4,318,541

DEVICES FOR THE LATERAL ALIGNMENT OF SHEETS

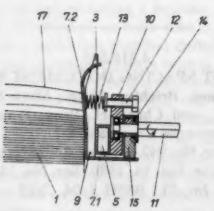
Hartmut Nagel; Hans Zimmermann, both of Coswig, and Fritz Pieper, Radebeul, all of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Jan. 25, 1980, Ser. No. 115,287

Claims priority, application German Democratic Rep., Feb. 1, 1979, 210750

Int. Cl.³ B65H *31/36*

U.S. Cl. 271—222 **9 Claims**



1. A device for positioning sheets in a stack in sheet transferring arrangements of sheet-processing machines, comprising first means for aligning of front edges of sheets to be stacked, second means for aligning of lateral edges of sheets to be stacked, said second aligning means including a plurality of fixed stops spaced from each other along the lateral edges of sheets being stacked and positioned at the opposite lateral sides of the sheets; and jogging means arranged in contact with the lateral edges of the sheets to be stacked, said jogging means including an oscillating plate having a horizontal arm and a vertical arm extending towards the upper end of the stack to be formed, drive means operatively connected to said horizontal arm for providing the oscillating movement of said plate towards the stack to be formed to impart impulses to falling sheets being stacked, and a compression spring adapted to bias said vertical arm in a direction toward said stack.

4,318,542

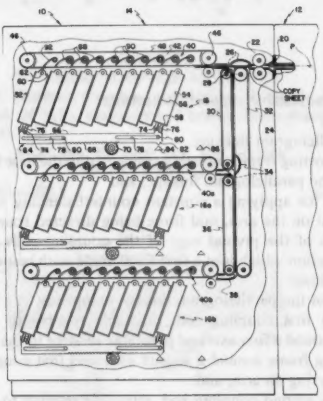
SORTER MECHANISM

Conrad Altmann, and Edgar M. Feathers, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 435,910, Jan. 23, 1974, abandoned. This application Aug. 28, 1979, Ser. No. 70,295

Int. Cl.³ B65H *29/54*

U.S. Cl. 271—290 **12 Claims**



1. Apparatus for receiving and stacking a series of discrete sheets traveling, with a similar facial orientation, along a path leading to such apparatus, said apparatus comprising:

a sheet receiving bin for receiving sheets from said path and for supporting such received sheets in either of two facial orientations, said bin being mounted for movement relative to said path into first or second sheet receiving positions, said bin including a first sheet supporting member effective when said bin is in said first position to support sheets received from said path with a facial orientation similar to the facial orientation of such sheets in said path, and a second sheet supporting member effective when said bin is in said second position to support sheets received from said path with a different facial orientation relative to the facial orientation of such sheets in said path; and

means for selectively moving said bin into said first or second positions.

4,318,543

POOL TABLE CONVERSION INSERTS

Howard A. Vollendorf, 360 S. Elwood, Glendora, Calif. 91740

Filed Jan. 7, 1980, Ser. No. 110,239

Int. Cl.³ A63D *15/00*

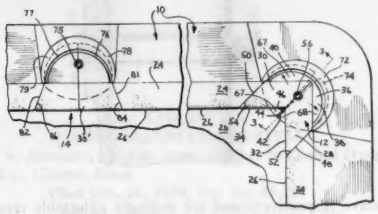
U.S. Cl. 273—4 A **13 Claims**

1. An insert for plugging the pocket of a pool table and extending the rail thereacross so that games such as billiards

and craps can be played on the top thereof between the rails thereof, said insert including:

first and second body portions, said first body portion having a first lower flange portion and said second body portion having a second lower flange portion;

at least one filler rail portion connected at least to said first body portion;



hinge means connecting said first and second body portions together for relative pivoting movement therebetween; and

spreader means connected between said first and second body portions to pivot said first and second body portions apart about said hinge means to force said first and second lower flanges into the pocket and thereby removably retain said insert therein.

4,318,544

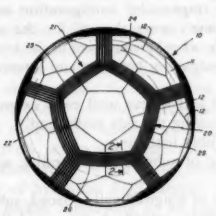
GAME BALL

William H. Brine, Jr., Weston, Mass., assignor to W. H. Brine Company, Milford, Mass.

Filed Oct. 30, 1980, Ser. No. 202,140

Int. Cl.³ A63B *41/08*

U.S. Cl. 273—65 EG **7 Claims**



1. A game ball having an inner air chamber and a spherical surrounding outer shell,

said outer shell comprising an outer surface having a plurality of indented wind channel means extending in at least three different linear directions angularly arranged with respect to each other,

each of said wind channel means comprising at least three adjacent parallel elongated depressions extending for a segment length of at least 1 inch,

and said plurality of wind channel means being arranged over said surface in a balanced order and acting to aid in improved aerodynamic balance to said ball.

4,318,545

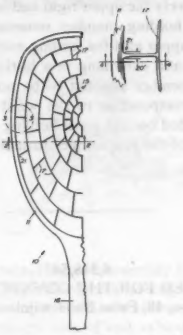
MOLDED RACKET

Royce H. Husted, 711 Lakeside Dr., Wheaton, Ill. 60187

Continuation-in-part of Ser. No. 16,522, Mar. 1, 1979, abandoned. This application Feb. 25, 1980, Ser. No. 124,572

Int. Cl.³ A63B *49/10*

U.S. Cl. 273—73 R **3 Claims**



1. In a molded game racket comprising in combination,

(a) a handle,

(b) a frame, having a frame cross-section with a frame thickness and a frame width, and

(c) an elastic net molded in unison with said frame, said net comprising a plurality of elastic filaments providing an elastic hitting area, each such filament having a filament cross-sectional area with a filament thickness and a filament width, said filament thickness being substantially smaller than said frame thickness and said filament width being substantially smaller than said frame width,

the improvement wherein said elastic filaments intermittently and abruptly change direction at a plurality of intersections and do not form straight lines across said net, so that a ball hitting the net develops primarily bending stresses rather than tension in said elastic filaments.

4,318,546

GOLF CLUB SWING TRAINING DEVICE

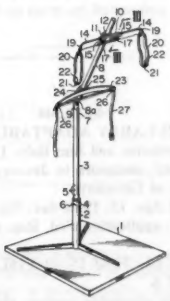
Chin S. Chen, Taipei, Taiwan, assignor to Chien Chung Chen, Japan

Filed Mar. 16, 1981, Ser. No. 244,039

Claims priority, application Japan, Jan. 27, 1981, 56-10467

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—188 R **7 Claims**



1. A golf-swing correcting apparatus, comprising: a support having a lower part and an upper part tiltable in the forward

direction relative to said lower part; a back holding member mounted at a mid portion thereof on said upper part for turning motion about the axis of said upper part and extending in a horizontal direction, said back holding member adapted to be positioned at a height substantially corresponding to the shoulders of a given practitioner; a pair of straps provided on opposite horizontal ends of said back holding member adapted for holding respectively the upper right and left arms of the practitioner; a waist holding member mounted at a mid portion thereof on said upper part for turning motion about the axis of said upper part and extending in a horizontal direction, said waist holding member adapted to be positioned at a height substantially corresponding to the waist of the practitioner; and a belt provided on said waist holding member adapted for tieing the waist of the practitioner to said waist holding member.

4,318,547

DEVICES USED FOR THE CONNECTION OF PIPES

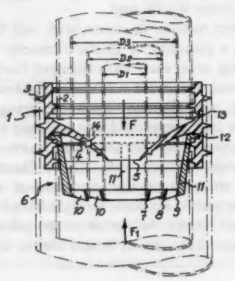
Kurt S. B. Ericson, 48, Prins Boudewijnlaan at B-2230, Schilde, Belgium

Filed May 1, 1980, Ser. No. 145,729

Claims priority, application Belgium, May 4, 1979, 876033

Int. Cl.³ F16J *9/00, 15/10;* **F16L** *17/00*

U.S. Cl. 277—207 A **4 Claims**



1. A device for connecting tubular elements of different sizes, said device comprising a muff of flexible material provided on its inner periphery with a tightening membrane in the shape of a lip, and guiding or centering means for the tubular elements to be introduced, said means being constituted by a series of rings of different sizes which are coaxially maintained one with respect to the other by cross-pieces, the outer ring of said means being connected by arms to the muff.

4,318,548

ANGULARLY ADAPTABLE SEAL

Ingrid Oberle, Dorsheim, and Jens Bahr, Ingelheim, both of Fed. Rep. of Germany, assignors to Jenaer, Glaswerk, Schott & Gen., Fed. Rep. of Germany

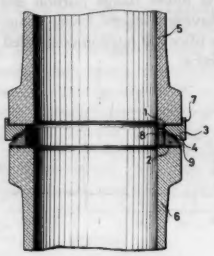
Filed Jun. 13, 1980, Ser. No. 159,194

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1979, 2923924

Int. Cl.³ F16J *15/10;* **F16L** *27/00*

U.S. Cl. 277—207 A **5 Claims**

1. An angularly adaptable sealing element for fitting between a pair of planar sealing surfaces provided at adjoining mutually connected pipe ends in a pipeline, comprising two ring parts and a casing surrounding the same at their outer end surfaces and at their inner diameter, wherein mutually adjacent contacting surfaces of the two rings are spherically convex and



concave respectively and are slidingly adjustable relative to each other.

4,318,549

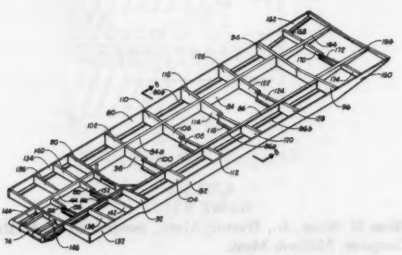
TANK FOR CONTAINING LARGE VOLUMES OF FLUIDS

Raymond E. Pletcher, 705 NW. 5th, Wilson, Okla. 73463

Filed Sep. 2, 1980, Ser. No. 183,056

Int. Cl.³ B60P *3/22;* **B62D** *21/02;* **B65D** *88/12, 90/02*

U.S. Cl. 280—5 C **3 Claims**



1. A transportable tank for containing large volumes of dense and corrosive liquids, comprising:

a pair of opposed, substantially parallel, ribbed side walls of generally trapezoidal configuration and each having a relief at one corner thereof for the accommodation of detachable wheel means used in the transport of the tank;

a top wall extending between and interconnecting the side walls;

a front wall and a rear wall each extending between and interconnecting the side walls; and

a floor assembly including:

a plurality of substantially parallel, spaced longitudinal beams;

a plurality of longitudinally spaced, substantially parallel, transversely extending, trapezoidally shaped channel plates, said channel plates extending between and interconnecting said longitudinal beams and including multiple arrays of substantially transversely aligned channel plates, each of said arrays including a pair of end-lapped, reversely turned, centrally disposed channel plates having relatively smaller end portions overlapped and secured to each other adjacent the longitudinal centerline of the tank, each of said channel plates having edge flanges disposed along the opposite side edges thereof, and further positioned to locate all of the edge flanges at one side edge of each of the channel plates in a common plane for flatly supporting the tank in an operational position resting upon the ground, and to locate the second edge flanges at opposite edges of

each of the channel flanges in two planes extending at an angle to each other and converging at the longitudinal centerline of the tank; and

internal floor plates supported upon, and secured to, said second edge flanges to form a V-shaped supporting surface upon the interior of the tank.

4,318,550

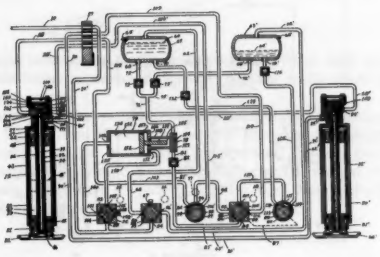
HYDROPNEUMATIC SYSTEM

LeRoy V. Jacobsen, Clinton, Iowa, assignor to Central Hydraulics Co., Clinton, Iowa

Filed Oct. 26, 1979, Ser. No. 88,297

Int. Cl.³ B60S 9/10; F15B 13/02

U.S. Cl. 280—766 **10 Claims**



1. A hydropneumatic system for operating landing gear of a truck trailer and operable from a source of pressurized air, said system comprising first and second sources of hydraulic fluid, hydraulic cylinder means including at least one piston and a landing gear leg interconnected with said piston for providing landing gear leg extension or retraction in response to movement of said piston, said cylinder means having first and second chambers on opposite sides of said piston and each adapted for receiving said hydraulic fluid under pressure, source selection means for enabling hydraulic fluid to be provided by a selected one of said sources, hydraulic pressure boosting means selectively operable from said source of pressurized air for boosting the pressure of hydraulic fluid provided by the selected source to a predetermined value substantially greater than that of said air, valve means for selectively connecting said hydraulic booster means to either of said first or second chambers for receiving pressure-boosted hydraulic pressure from the selected one of said sources for landing gear leg extension or retraction, respectively, and while connecting said second or first chambers, respectively, to the non-selected one of said sources for return of hydraulic fluid thereto, said hydraulic pressure boosting means comprising an air-operated reciprocating pump including an air cylinder and an air-driven piston reciprocal in said air cylinder for boosting said hydraulic pressure of hydraulic fluid received from the selected hydraulic source with each stroke of said air-driven piston, and booster control valve means for selectively connecting said air cylinder to said source of pressurized air, said booster control valve means being adapted successively to connect one end of said air cylinder to said source of pressurized air for causing a pumping stroke of said air piston and subsequently to connect said one end of said air cylinder to the opposite end thereof for causing a return stroke of said air piston while disconnecting said one end from said source of pressurized air, said opposite end of said air cylinder including means for venting of air therefrom during said pumping stroke.

4,318,551

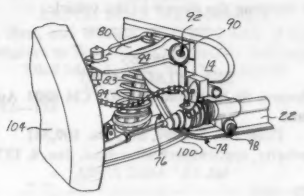
VEHICLE FRONT SUSPENSION SYSTEM SUPPORT

Harry Shay, Novi; Daniel Sanders, Lansing; Nelson R. Turner, Battle Creek, and Charles Bienenstein, Bloomfield, all of Mich., assignors to The Model A and Model T Motor Car Reproduction Corp., Wixam, Mich.

Filed Sep. 28, 1979, Ser. No. 80,000

Int. Cl.³ B62D 21/00

U.S. Cl. 280—788 **4 Claims**



1. A vehicle front wheel support assembly for supporting the front wheels of a replica vehicle, comprising a pair of longitudinally extending frame side rails, a transverse frame member vertically aligned with the axes of said vehicular front wheels, said frame member having a central horizontal portion extending between said rails at a lever beneath the axes of the front wheels and beneath the level of said rails, said frame member having an end portion extending upwardly beneath each of the adjacent side rails to be secured thereto and to terminate outside the adjacent side rail with the upper extremity of said end portion lying beneath the upper edge of said side rail, an upper wheel pivot arm pivotally carried by each of said rails on the outside thereof generally above the adjacent terminal end of the transverse frame member and beneath the level of the upper edge of the adjacent side rail, a lower wheel pivot arm pivotally carried by each of those end portions of the transverse frame member which lie outside the adjacent side rail and beneath the adjacent upper pivot arm, and a shock absorber interposed between said lower arm and the upper extremity of said end portion, so that the entire front wheel support assembly lies beneath the level of the upper edges of the side rails.

4,318,552

DEFLECTION DEVICE FOR SAFETY BELTS

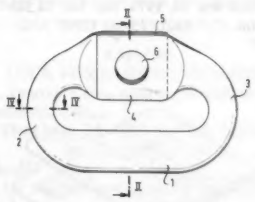
Helmut Seifert, and Karl Möndel, both of Schwäbisch Gmünd, Fed. Rep. of Germany, assignors to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Jun. 8, 1979, Ser. No. 46,868

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1978, 7817604[U]

Int. Cl.³ A62B 35/02

U.S. Cl. 280—801 **4 Claims**



2. Deflection device for a safety belt for attachment to a motor vehicle in which one end of the safety belt is rolled up on an automatic winder in an end region and the other end of the belt is adapted for locking engagement, with a belt portion between the automatic winder and the lock routed over a fixed rounded deflection crossbar, said deflection crossbar having a straight bar and a tubular cross section and at least a portion of

the deflection device for securing it to the vehicle, constitute one continuous piece of metal made of a single piece of bent tube material, wherein the tube material is circular and has an outer diameter of more than 12 mm, and wherein the deflection crossbar is circular and has an outer diameter of more than 12 mm and, wherein the tube material is bent to form a loop with a straight deflection bar for the safety belt, and wherein the ends of the tube material are flattened and openings provided in the ends, and wherein the ends are superimposed upon each other with their widened surfaces and the openings in the ends aligned for securing the device to the vehicle.

4,318,553

SKI ATTACHMENT

Günter Schwarz, Steinacherstrasse 67, CH-8804 Au/Zuerich, Switzerland

Filed Jan. 3, 1980, Ser. No. 109,341
Claims priority, application Switzerland, Jan. 8, 1979, 112/79
Int. Cl.³ A63C *11/02*
U.S. Cl. 280—814 **8 Claims**

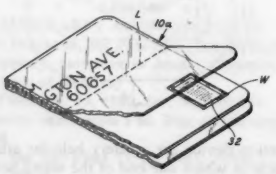
1. Ski attachment comprising a base portion having a dimension corresponding to the ski width, at least one part extending upwardly from said base portion and having a surface facing outwardly from the side of the ski to which it is attached and facing toward the other ski of a pair for preventing the crossing of the skis of the pair during skiing, and means for detachably fixing said attachment to the ski, wherein the improvement comprises two separate said parts extending upwardly from said base portion and being spaced apart by a dimension at least twice the thickness of the thinnest area of the skis on which said attachment is used for forming together with said base portion a clamp by which a pair of skis may be clamped together within the space between said two parts with the opening to the space being located outwardly from said base portion.

4,318,554

COMBINED MEDICAL AND/OR INFORMATIONAL IDENTIFICATION CREDIT CARD

Thomas P. Anderson, Winnetka, and Richard G. Bramley, Northbrook, both of Ill., assignors to Microseal Corporation, Zion, Ill.

Filed Sep. 10, 1979, Ser. No. 74,249
Int. Cl.³ B42D *15/00*; G09F *3/02*
U.S. Cl. 283—7 **11 Claims**



1. A combined information and credit card unit comprising:

a plurality of laminar parts made of heat-fusible plastic, said parts being selectively partially heat-fused along an area of discrete size to form a pre-laminated half and said parts being unattached along the remaining area to form an unbonded half,

machine-imprinted indicia formed in the pre-laminated half of the card unit from a computer memory that originated such indicia, and

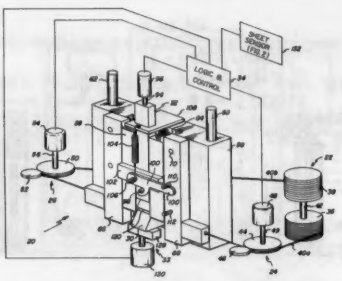
a window formed along the remaining area in a laminar core to receive an information member inserted in said window, so that said unbonded half parts can be fused a substantial time after said pre-laminated half is formed to make the card unit into an integral unitary laminar whole.

4,318,555

STAPLER

Henry S. Adamski, Webster, and John F. Hartman, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 15, 1980, Ser. No. 112,251
Int. Cl.³ B27F *7/21*
U.S. Cl. 283—7 **12 Claims**



1. Apparatus for producing staple blanks of different lengths, comprising:

means for supporting a staple blank;

means for supplying a continuous length of staple material;

means for selectively feeding either (1) a first predetermined length of staple material from said means for supplying to said means for supporting from a first direction; or (2) a second predetermined length of staple material from said means for supplying to said means for supporting from a second opposite direction;

first and second severing assemblies respectively spaced first and second distances from said means for supporting; and

means for selectively actuating said means for feeding either (1) to feed said first length of staple material in cooperation with said first severing assembly to produce a staple blank of said first predetermined length or (2) to feed said second length of staple material in cooperation with said second severing means to produce a staple blank of said second predetermined length.

4,318,556

CHAIR AND SEAT-BACK UNIT THEREFOR

David L. Rowland, 8 E. 62nd St., New York, N.Y. 10021

Filed Jun. 11, 1979, Ser. No. 47,483
Int. Cl.³ A47C *3/00, 7/16*
U.S. Cl. 297—445 **15 Claims**

1. A chair comprising:

a pair of elastically deformable, generally L-shaped side frame members, forming a seat portion with a forward edge and a back portion with an upper edge, the side frame members being arched forwardly in the back portion and arched upwardly in the seat portion;

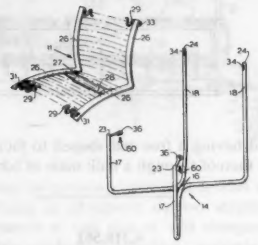
stretcher means spaced well away from the forward and upper edges, holding the side frame members apart, in

generally parallel relationship, and being the only structure holding the side frame members apart;

flexible user support means extending between the side frame members in the seat portion and the back portion;

a chair frame adapted to be supported on a surafce, the frame having a pair of spaced upper rear support points and a pair of spaced front support points;

first connecting means connecting the upper ends of the side frame members, in the back portion, to the upper rear support points; and



second connecting means connecting the front ends of the side frame members, in the seat portion, to the front support points;

whereby the seat portion and back portion are supported as a flexible unit in cradling fashion from the four support points, and the side frame members in the seat portion flatten to varying degrees depending on the weight of the user, resulting in correct support for most users and a high degree of comfort.

4,318,557

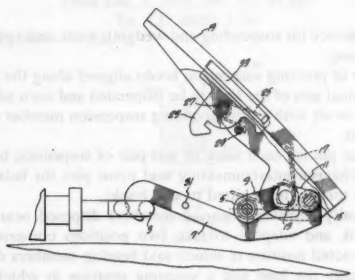
LATCHING MECHANISM

William R. Bourne, Anaheim; Raymond E. Harmon, Villa Park, and Bernard W. Henrichs, Tustin, all of Calif., assignors to Hartwell Corporation, Placentia, Calif.

Filed Oct. 9, 1979, Ser. No. 82,641

Int. Cl.³ E05C 5/02

U.S. Cl. 292—113 **3 Claims**



1. A latching mechanism comprising:

a keeper;

a mounting bushing;

an engaging member adapted to engage said keeper;

a first compression link for pivoting about said mounting bushing; and

a second compression link pivotally connected both with said first compression link at a first moving pivot, and said engaging member at a second moving pivot, wherein a plane between said mounting bushing and said second moving pivot defines a load line and the first moving pivot between said first and second compression links is adapted to be moved from an initial or secured position adjacent said engaging member and/or one side of said load line to a released or unlatched position spaced apart from said engaging member and on the opposite side of said load line, wherein said mounting bushing is in slidable contact with said engaging member and thus controls the movement of the second moving pivot as the engaging member is in engagement with said keeper.

4,318,558

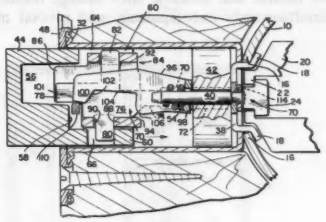
LATCH BOLT MECHANISM

Walter E. Best, and William R. Foshee, both of Indianapolis, Ind., assignors to Best Lock Corporation, Indianapolis, Ind.

Filed May 5, 1980, Ser. No. 146,670

Int. Cl.³ E05C 1/16

U.S. Cl. 292—173 **27 Claims**



1. Deadlocking latch bolt mechanism, comprising

a tubular housing adapted to be mounted in the edge of a door,

a latch bolt slidable in the housing between projected and retracted positions and having a rearward skirt portion defining a radial window and an opposite slot,

a deadlocking tumbler movable between deadlocking and release positions,

an auxiliary bolt for controlling the position of the deadlocking tumbler,

a tailpiece having a rearward portion adapted to be drawn rearward by retraction means,

said mechanism also including the improvement comprising

a cross head on the tailpiece having a retractor arm engaged in the radial window of the latch bolt for retracting such bolt,

a tailpiece cam member slidably mounted in the latch bolt and having a side wall containing a window aligned with said latch bolt window, said cross head retractor arm being engaged in such side wall window so as to move the cam member rearward when the tailpiece is drawn rearward by the retractor means,

and cam means acting between the cam member and tumbler for moving the tumbler from deadlocking position to release position in response to such rearward movement of the cam member by such rearward drawn movement of the tailpiece.

4,318,559

LOCK FOR SLIDING MEMBERS

Carl Burton, Denver, Colo., assignor to Johnston & Margolis, P.C., Broomfield, Colo.

Filed Mar. 31, 1980, Ser. No. 135,338

Int. Cl.³ E05C 17/32

U.S. Cl. 292—263 **9 Claims**

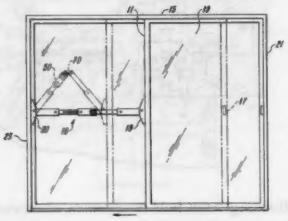
1. A lock for use between an abutment member and a slidable member of the type movable along a path between an open position and a closed position comprising:

First arm member means having inner and outer end portions;

a first end element;

means for mounting said outer end portion of said first arm member means on said first end element providing pivotal movement of said first arm member means;

second arm member means having inner and outer end portions;
a second end element;
means for mounting said outer end portion of said second arm member means on said second end element providing pivotal movement of said second arm member means;
a pivotal member having first and second end portions;
means for pivotally connecting said first end portion of said pivotal member to said inner end portion of said first arm member means providing pivotal movement;
means for pivotally connecting said second end portion of said pivotal member to said inner end portion of said second arm member means providing pivotal movement;
lockable slide linkage means having locking means capable of being locked and unlocked;
said lockable slide linkage means having an inside size greater than outside size of said first or second arm member means, said lockable slide linkage means capable of simultaneously encompassing said pivotal member and



said inner end portion of said first and second arm member means;
said first arm member means having a slide guide means adjacent said inner end portion being at least the length of said lockable slide linkage means permitting motion of said lockable slide linkage means along said first arm member means;
said slide guide means having inner and outer end portion;
resilient means having first and second end portions;
first resilient restraint means attaching said first end portion of said resilient means to said outer end portion of said slide guide means limiting the amount of movement of said lockable slide linkage means in the direction of the outer end portion of said first arm member means;
second resilient restraint means attaching said second end portion of said resilient means to said lockable slide linkage means at said inner end portion of said slide guide means limiting the amount of overcenter movement of said lockable slide linkage means when sliding member is in the closed position.

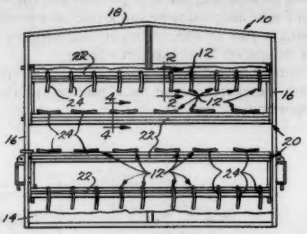
4,318,560

TOBACCO SUPPORTING TINE STRUCTURE WITH IMPROVED LOCKING MEANS

Robert W. Wilson, Charlotte, N.C., assignor to Powell Manufacturing Company, Inc., Bennettsville, S.C.

Filed Apr. 21, 1980, Ser. No. 141,762
Int. Cl.³ A24B *1/08*
U.S. Cl. 294—5.5 **11 Claims**

9. A tobacco supporting tine structure comprising an elongated rod bent to define a relatively long longitudinally extending leg portion having a free end thereof shaped to facilitate a piercing movement thereof through a bulk mass of tobacco leaves, a bight portion extending transversely from the other end of said leg portion, a relatively short parallel section extending from the opposite end of said bight portion from which said leg portion extends in the same direction as the latter, a locking section extending transversely from said short parallel section in a direction toward and at an angle of approximately 45° with respect to said leg portion and a relatively long leg section extending longitudinally from said locking section in generally coextensive parallel relation to said leg



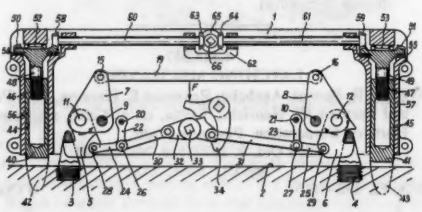
portion and having a free end shaped to facilitate a piercing movement thereof through a bulk mass of tobacco leaves.

4,318,561

CENTRAL-CONTROLLED DEVICES FOR CARRYING AND WEDGING LOADS UNDER AIRCRAFT

Jean H. Hasquenoph, Lagny, and Pierre F. Coutin, Paris, both of France, assignors to R. Alkan & Cie, France

Filed Oct. 12, 1979, Ser. No. 84,347
Claims priority, application France, Oct. 17, 1978, 78 29495; Apr. 20, 1979, 79 10010
Int. Cl.³ B64D *1/02*
U.S. Cl. 294—83 R **6 Claims**

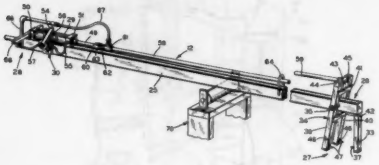


5. A device for suspending and wedging loads under aircraft comprising:
a pair of pivoting suspension hooks aligned along the longitudinal axis of the load to be suspended and each adapted to co-act with a corresponding suspension member of the load,
a pivot pin for each hook of said pair of suspension hooks,
a mechanism interconnecting said pivot pins for balancing the torques transmitted to said hooks,
vertically adjustable bearing members disposed near each hook and adapted to take two positions comprising a retracted position in which said bearing members do not engage the load and a wedging position in which said bearing members engage the load transversally with relation to the longitudinal axis thereof in order to ensure the wedging of the load, each bearing member comprising a pair of pivoted lateral arms constituting together a wedging clamp, each lateral arm being connected at one end to a common slide and having its opposite end adapted to engage the load, and each lateral arm being pivoted at an intermediate portion about a movable axis of rotation,
and means providing a centralised and simultaneous control of the bearing members, said means actuating the slide associated with each bearing member to cause a movement of said slides in a substantially vertical direction ensuring the engagement of the load by said bearing members.

4,318,562
GRASPING APPARATUS FOR HANDLING HEATED ARTICLES

Raymond E. Tompkins, Ottawa, Ill., assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Mar. 3, 1980, Ser. No. 126,382
Int. Cl.³ B66C 1/44
U.S. Cl. 294—88 **9 Claims**

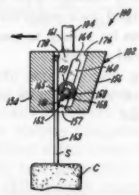


1. An apparatus for grasping individual articles at a remote location comprising an elongated support member, a claw mechanism mounted at one end of said elongated support member, said claw mechanism including a stationary claw arm and a pivotal claw arm, means for pivotally mounting said pivotal claw arm on said elongated support member whereby one end of said pivotal claw arm is movable toward and away from the corresponding end of said stationary claw arm, opposed gripping pins affixed to said stationary and pivotal claw arms, means for cooling said claw arms and said gripping pins carried thereby, moving means mounted at the other end of said elongated support member, push-pull means connecting said moving means to said pivotal claw arm for moving the depending end of said pivotal arm to-and-fro, and means for selectively actuating said moving means.

4,318,563
EXTRACTOR BAR

Roscoe T. Fowler, New York, N.Y., assignor to DCA Food Industries, Inc., New York, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,837
Int. Cl.³ B65B 5/08
U.S. Cl. 294—87 SH **8 Claims**

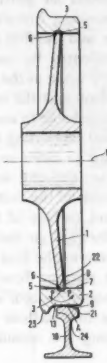


1. A combination stick locking and releasing device for use in a frozen stick-mounted confection forming machine comprising: a pair of opposed longitudinally extending members downwardly converging to define a trough having a longitudinally extending bottom opening between said members; an assembly having a longitudinally extending support means substantially parallel to said longitudinally extending members and a plurality of locking means positioned along the length of said support means, said assembly movable within said trough between a first stick locking position and a second stick releasing position whereby when said assembly is in said first position a stick entering said trough through said opening will be locked between one of said locking means and one of said members; and, means for moving said assembly from said first position to said second position.

4,318,564
RAILWAY CAR WHEEL

Hans-Martin Brauer, Mögglingen, Fed. Rep. of Germany, assignor to Schwäbische Hüttenwerke Gesellschaft mit beschränkter Haftung, Aalen-Wasseralfingen, Fed. Rep. of Germany

Filed Oct. 12, 1978, Ser. No. 950,591
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1977, 2746407
Int. Cl.³ B60B 3/04, 9/12, 17/00, 21/00
U.S. Cl. 295—11 **13 Claims**



1. A wheel arranged for movement substantially longitudinally along a rail and having a rotational axis therewith which includes in combination: at least one disc of said wheel rotatable about said axis, and a wheel rim having a tread surrounding said disc, said disc having said wheel rim universally mounted therewith, said tread having contacting points for engaging the rail, said rim at least within the region of said contacting points being journalled rotatably relative to said disc about the axis located at least substantially in the direction of movement of said wheel, and means effecting lubrication between said rim and said disc to supplement dampening for rolling and irregular oscillating motion during universal movement both transversely and longitudinally therewith.

6. A wheel arranged for movement substantially longitudinally along a rail and having a rotational axis therewith which includes in combination: at least one disc of said wheel rotatable about said axis, and a wheel rim having a tread surrounding said disc, said disc having said wheel rim universally mounted therewith, said tread having contacting points for engaging the rail, said rim at least within the region of said contacting points being journalled rotatably relative to said disc about the axis located at least substantially in the direction of movement of said wheel, and spring means between said rim and said disc to supplement dampening for rolling and irregular oscillating motion during universal movement both transversely and longitudinally therewith.

4,318,565
STATOR APPARATUS FOR A MOVING VEHICLE

Giles P. Lay, Sulphur, Okla., assignor to Layco, Inc., Sulphur, Okla.

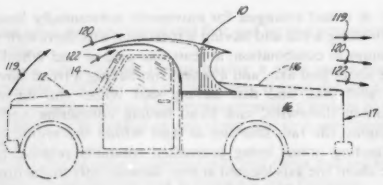
Continuation of Ser. No. 544,043, Jan. 27, 1975, abandoned. This application Mar. 24, 1980, Ser. No. 133,614
Int. Cl.³ B62D 37/02
U.S. Cl. 296—1 S **2 Claims**

1. In a vehicular system comprising a vehicle moving and forming a bow wave and a trailing wake in ambient air, the improvement comprising:

a main stator generally disposable a predetermined distance above and near a top surface of the vehicle, the main stator having an outer surface and an inner surface, the inner

surface defining with the top surface of the vehicle a portion of a first air flow area, the outer and the inner surface of the main stator meeting to form a forward air shearing edge to cause air having relative motion to the main stator to separate into a first air portion flowing under the inner surface of the main stator and above the top surface of the vehicle in the first airflow area and a second air portion flowing over the outer surface, the outer surface and the inner surface of the main stator meeting to form a trailing flow directing edge, the first air portion and the second air portion being generally directed aft and downward toward and into the trailing wake of the vehicle, and the first air portion and the second air portion prevented by such motion from being coupled with the bow wave as the first air portion and the second air portion flow past the rear of the vehicle;

a first support stator attachable to and disposable near a first side of the vehicle and supporting the main stator, the first support stator having an outer surface and an inner surface, the inner surface defining with the first side of the vehicle another portion of the first airflow area, the inner surface and the outer surface of the first support stator meeting to form a forward air shearing edge to cause air having relative motion to the first support stator to separate into a first air portion flowing between the inner surface of the first support stator and the first side of the vehicle through the first airflow area and a second air portion flowing along the outside of the first support



stator, the outer surface and the inner surface of the first support stator meeting to form a trailing flow directing edge, the first air portion and the second air portion being generally directed aft and inward and into the trailing wake of the vehicle, the first air portion and the second air portion prevented by such motion from being coupled with the bow wave as the first air portion and the second air portion flow past the rear of the vehicle; and

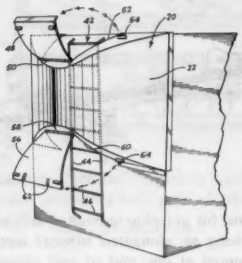
a second support stator attachable to and disposable near a second side of the vehicle and supporting the main stator, the second support stator having an outer surface and an inner surface, the inner surface defining with the second side of the vehicle another portion of the second side of the vehicle another portion of the first flow area, the inner surface and the outer surface of the second support stator meeting to form a forward air shearing edge to cause air having relative motion to the second support stator to separate into a a first air portion flowing between the inner surface of the second support stator and the second side of the vehicle and a second air portion flowing along the outside of the second support stator, the outer surface and inner surface of the second support stator meeting to form a trailing flow directing edge, the first air portion and the second air portion being generally directed aft and inward and into the trailing wake of the vehicle, and the first air portion and the second air portion prevented by such motion from coupling with the bow wave air as the first air portion and the second air portion flow past the rear of the vehicle.

4,318,566

WIND FAIRING DEVICE

Gerald M. Fitzjarrell, Brownsville, Oreg., assignor to Takena Industries, Inc., Albany, Oreg.

Filed Apr. 4, 1980, Ser. No. 137,135
Int. Cl.³ B62D *35/00*
U.S. Cl. 296—1 S **6 Claims**



1. A fairing device for mounting on the upright forward face of a vehicle for reducing aerodynamic drag comprising:

a front wall expanse extending between opposite sides of the vehicle which is convexly curved with curvature limited essentially to curvature about a vertical axis, said wall expanse having a forward most extremity located substantially midway between the sides of the vehicle and portions of the expanse on either side of this extremity curving symmetrically rearwardly to meet the sides of the vehicle,

said front wall expanse having an upper margin that, progressing between opposite sides of the vehicle, curves downwardly and upwardly and further having a lower margin that, progressing between opposite sides of the vehicle, curves upwardly and downwardly thereby to impart an hourglass profile to the expanse when viewed from the front and in an horizontal direction, and

top and bottom wall expanses with curvature limited essentially about horizontal axes extending from the face of the vehicle at the top and at the bottom of the device and joining with said upper and lower margins,

each of said top and bottom wall expanses including an opening and a hinged door panel for the opening closing it off and which can be swung to one side to open up the opening of the wall expanse,

said openings being disposed one above the other and in substantial vertical alignment to produce a passageway through the device.

4,318,567

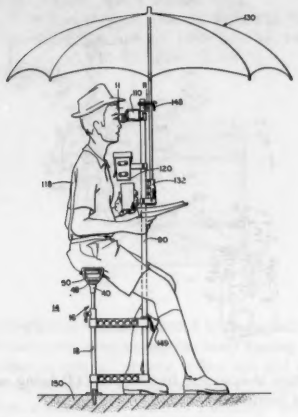
OBSERVATION DEVICE

Ralph E. Guthier, 220 Evergreen, Southgate, Ky. 41071

Filed Mar. 10, 1980, Ser. No. 128,546
Int. Cl.³ A47C *7/66, 9/10*
U.S. Cl. 297—184 **10 Claims**

1. A portable observation device which comprises an upright ground post, seat means at an upper end of the ground post, support means at a lower end of the ground post for resting on the ground, cantilever frame means mounted on the ground post, an upright main post supported by the cantilever frame means and means mounted on the main post for supporting binoculars in position for use by an observer on the seat

means, the main post, the seat means and the binoculars swinging with the observer and the ground post as the observer



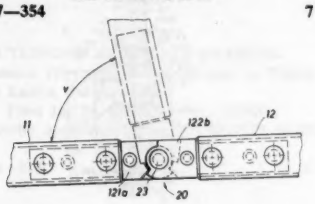
swings the seat means and the ground post about the support means.

4,318,568

HINGE DEVICE FOR CONNECTING TWO FURNITURE PORTIONS

Ricky Ericsson, Älmhult, Sweden, assignor to Inter-Ikea A/S, Denmark

Filed Apr. 2, 1980, Ser. No. 136,482
Claims priority, application Denmark, Apr. 9, 1979, 1478/79
Int. Cl.³ A47C *1/00*
U.S. Cl. 297—354 **7 Claims**



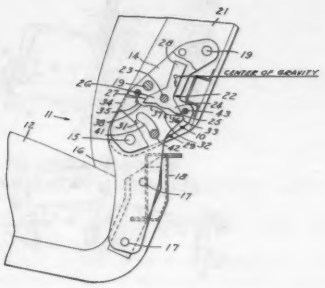
1. A hinge device for connecting two furniture portions (1, 2) such as a sofa seat (1) and a back (2), which must be mutually pivotal, each furniture portion comprising a circumferential frame (1*a*, 1*b*) preferably of metal tubes, said furniture portion comprising one or more tube projections (11) opposing corresponding projections (12) on the second furniture portion, characterized in that the individual tube projection (11) on each furniture portion (1) is provided with a bundle (21) of parallel sheet-shaped hinge means (121*a*, 121*b*), which by means of a main pin (23) is hinged to a second almost corresponding bundle (22) of parallel sheet-shaped hinge means (122*a*, 122*b*) on the second tube projection (12) of the second furniture portion (2) opposing the tube projection (11), every second hinge means of each bundle (21) being constituted by a hinge lap (121*b*) and the remaining hinge means of the bundle being constituted by an angle controlling lap (121*a*), and that the hinge lap (121*b*) and the angle controlling lap (121*a*) are located in such a manner that each hinge lap (121*b*) of one bundle (21) always opposes an angle controlling lap (122*a*) of the second bundle (22), the hinge lap (121*b*) and the angle controlling lap (122*a*) comprising means (38*a*, 38*b*, 45) restricting the angle of rotation (v) of one furniture portion (1) relative to the second furniture portion (2).

4,318,569

SEAT BACK LATCH MECHANISM

Robert Bilenchi, Dearborn Heights, and Edgar G. Trudeau, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 28, 1977, Ser. No. 819,920
Int. Cl.³ A47C *1/00*; B60N *1/04*
U.S. Cl. 297—379 **3 Claims**



1. A seat back latch mechanism for a vehicle seat assembly having a substantially horizontal seat structure and an upstanding backrest structure pivotally supported on support arms for tiltable movement over the seat structure,

the latch mechanism comprising:

a latch pawl having first, second and third arms,

pivot means on the backrest structure mounting the latch pawl for swinging movement about a pivot axis,

the latch pawl arms extending substantially radially from the pivot axis,

and a latch control member mounted on the seat structure,

the latch control member comprising a substantially horizontally extending ramp having at one end a cam portion and terminating at its other end in a detent portion,

in normal upright position of the backrest structure an end portion of the first arm being engaged with the cam portion to maintain an end portion of the second arm in latching attitude relative to the ramp detent portion,

the latch pawl third arm extending upwardly from the juncture of the first and second arms with its center of gravity offset relative to the latch pawl pivot axis to create a force couple acting eccentrically of the pivot axis to maintain engagement of the latch pawl with the cam portion as the latch pawl moves across the latch control member ramp during the application of a moderate tilting force to the backrest structure,

the cam portion being contoured to rock the latch pawl in a direction to swing the second arm end portion out of latching attitude in a direction to bypass the detent portion,

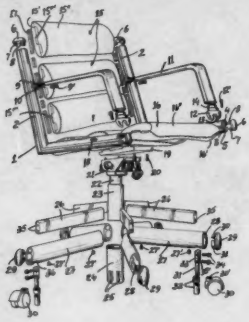
and upon the occurrence of a high vehicular deceleration rate sufficient to overcome the inertia of the backrest structure normally resisting tilting movement of the latter over the seat structure, the inertia of the latch pawl becoming a factor in causing disengagement of the latch pawl first arm end portion from the ramp cam portion while maintaining the second arm end portion in its latching attitude relative to the ramp detent portion whereby the pawl is operative to prevent tilting movement of the backrest structure.

4,318,570

STRUCTURE FOR SEATING MEANS

Adriana Adam, and Ana Beatriz M. Gomes, both of Sao Paulo, Brazil, assignors to Forma S.A Moveis e Objetos de Arte, Sao Paulo, Brazil

Filed Sep. 12, 1979, Ser. No. 75,062
Claims priority, application Brazil, Aug. 9, 1978, 7805141
Int. Cl.[3] A47C *3/00, 4/02*
U.S. Cl. 297—445 3 Claims



1. An improved seating means, comprising, a seat and back unit having two upright parallel L-shaped members which have a generally elliptical cross section with a central wall, two hollow semielliptical portions at opposite ends of the central wall and two longitudinal channels on opposite sides of the central wall; said members having terminal caps provided with projections which are pressed into the opposite ends of the L-shaped members, a plurality of independent upholstered elements connected to the L-shaped members to form the seat of the seating means, another plurality of independent upholstered elements connected to the L-shaped members to form the back of the seating means, each of said upholstered elements having a cushioned working force and a tray like base, each of said upholstered elements having lateral fin like protuberances at its opposite ends, and plastic guiding strips engaged with the protuberances and fitted in said channels for removably attaching the upholstered elements to the L-shaped members.

4,318,571

AUTOMATIC BRAKE CONTROL FOR TILTING OPERATOR CAB

Robert M. Vize, Bettendorf, Iowa, assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00130, § 371 Date Feb. 7, 1980, § 102(e) Date Feb. 7, 1980, PCT Pub. No. WO81/02334, PCT Pub. Date Aug. 20, 1981
PCT Filed Feb. 7, 1980, Ser. No. 137,113
Int. Cl.[3] B60T *13/22*
U.S. Cl. 303—71 14 Claims

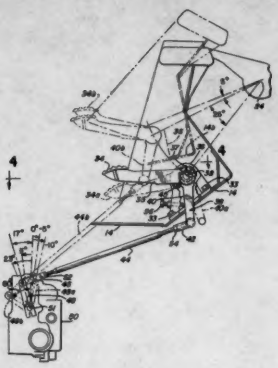
1. In a brake operating apparatus for a vehicle having a cab (12) tiltably mounted on a frame (22), comprising:

a support (36) connected to said cab (12),

a pedal (34) pivotally mounted on said support (36), said pedal (34) being adapted to move with the cab (12),

a brake actuating element (50) connected to said frame (22), and

means (44,40,48) for connecting said pedal (34) to said actuating element (50), said means (40,44,48) being adapted to move said brake actuating element (50) to a brake applying position in response to said cab (12) being moved to the tilted position.

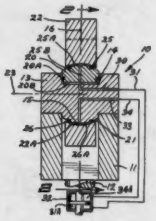


4,318,572

TENSION-COMPRESSION SWIVEL JOINT WITH HYDRAULIC FORCE REACTION

Rick B. Noha, Medicine Lake; David E. Watts, Minnetonka, and Martin M. Gram, Minneapolis, all of Minn., assignors to MTS Systems Corporation, Eden Prairie, Minn.

Filed Jan. 11, 1980, Ser. No. 111,238
Int. Cl.[3] F16C *17/00*
U.S. Cl. 308—2 R 12 Claims

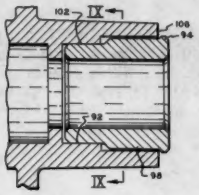


1. A swivel connection for use between first and second members which are loaded relative to each other, a first of said members forming an outer race having an annular interior part spherical surface, a second member including a pin passing through the opening defined by the annular surface and having part spherical surface portions mating with the annular interior part spherical surface, one of said first and second members having a fluid pressure cylinder defined therein and at least one piston sealingly mounted in the cylinder and having a surface including at least a portion of the part spherical surface of the one member and being mounted for limited movement toward and away from the mating part spherical surface of the other member, annular seal means mounted on one of the members and resiliently engaging the other member and defining an enclosed fluid chamber between the part spherical surface of said piston and the mating part spherical surface of the other member and forming a bearing area between the part spherical outer surface of the piston and the mating part spherical surface of the other member, and means to provide fluid under pressure to said cylinder and to the enclosed fluid chamber to urge the piston toward the other member and to provide a fluid pressure to support loads between the mating surfaces of said piston and said other member which tend to move the mating part spherical surfaces together.

4,318,573
ELECTRIC MOTOR DRIVE UNIT

Lyle J. Hamman, Eaton Rapids, Mich., assignor to Eaton Stamping Company, Eaton Rapids, Mich.

Division of Ser. No. 885,863, Mar. 13, 1978, Pat. No. 4,227,104.
This application Apr. 23, 1980, Ser. No. 142,896
Int. Cl.[3] F16C *23/04*
U.S. Cl. 308—72 4 Claims

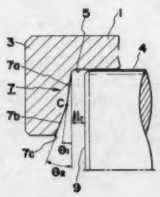


1. A self-aligning bearing adapted to be partially press fitted into a socket comprising an annular body having a cylindrical outer surface, a cylindrical bore, a first end and adjacent first axial end region, and a second end and adjacent second axial end region, a plurality of radially extending keys projecting from said outer surface along said second axial end region each extending the axial length of said second end region, and a radial flange defined on said second end projecting outwardly beyond said outer surface.

4,318,574
CYLINDRICAL ROLLER BEARING

Rinzo Nakamura, Hiratsuka, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 14, 1980, Ser. No. 168,091
Claims priority, application Japan, Jul. 18, 1979, 54/99266[U]
Int. Cl.[3] F16C *33/58*
U.S. Cl. 308—216 4 Claims



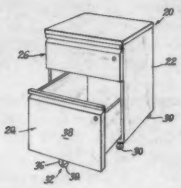
1. A cylindrical roller bearing which comprises: (a) an outer race, (b) an inner race, (c) a pair of guide flanges each having a guide face and associated with one of the races, and (d) a plurality of cylindrical rollers rotatably arranged between raceways of said outer race and said inner race, and

wherein the configuration of said guide face of said guide flange is a combined convex face comprising two tapered contiguous faces, a cross sectional profile of which, taken along the axis of rotation of the roller, includes two tapered straight lines, contiguous one after the other, both converging axially and outwardly from the axial ends of the respective raceway at different inclination angles, and further wherein the amount of axial movement of said rollers is restrained.

4,318,575
MOBILE FILE CABINET WITH DRAWER STABILIZING WHEEL SUPPORT MEANS

William R. Redlich, Winnetka, Ill., assignor to Eagle Sheet Metal Mfg. Company, Niles, Ill.

Filed Jan. 2, 1981, Ser. No. 222,243
Int. Cl.[3] A47B *63/02*
U.S. Cl. 312—250 4 Claims



1. A mobile file cabinet comprising:

a case which is generally rectangular in horizontal cross-section;

floor-engaging swivel caster means on the bottom of the case at four corners thereof;

at least one drawer movable between an opened position and a closed position within a compartment in a lower portion of the case;

drawer stabilizing wheel support means on the underside of the drawer immediately behind the front edge of the drawer and being rotatable about a fixed horizontal axis which is transverse to the direction of movement of the drawer; and

means supporting the drawer in said case providing sufficient vertical play between the front edge of the drawer and the case to lower the stabilizing wheel support means to engage the floor in opened position and to lift the stabilizing wheel support means out of engagement with the floor in closed position;

whereby when said drawer is in closed position, said cabinet can be moved in any direction on the swivel caster means to or from a work site without interference by the drawer stabilizing wheel support means, and whereby further, when the drawer is in opened position at a work site with the stabilizing wheel support means engaging on the floor, it will be stabilized against unintended sidewise movement and forward tilting movement.

4,318,576
CABINET ASSEMBLY

Alan A. Ford, Irvine, Calif., assignor to Kirsch Company, Sturgis, Mich.

Filed Jun. 12, 1980, Ser. No. 158,747
Int. Cl.[3] A47B *43/00*; A47F *3/06*
U.S. Cl. 312—264 4 Claims

1. For use with a free-standing shelving unit which includes at least a pair of parallel horizontal shelves and at least four vertical corner posts positioned between said shelves for holding same fixedly with respect to each other in vertically spaced relationship, means for converting at least part of the shelving unit into a closed cabinet, comprising:

a pair of end panels, a back panel and a pair of doors sized to extend vertically between said shelves and horizontally between pairs of said corner posts for defining a closed cabinet which utilizes said shelves as the top and bottom walls thereof, said end and back panels having grooves which project inwardly of the panels from the top and bottom edges thereof; and

a plurality of one-piece corner clips for embracing said corner posts adjacent the lower and upper ends of each post and for also supportingly engaging said panels and doors for defining the closed cabinet;

said plurality of corner clips including four rear corner clips

and four front corner clips, one of the rear corner clips being positioned adjacent the upper and lower ends of each rear corner post directly adjacent the respective upper and lower shelves, and one of the front corner posts being positioned adjacent the upper and lower ends of each front corner post directly adjacent the respective upper and lower shelves;

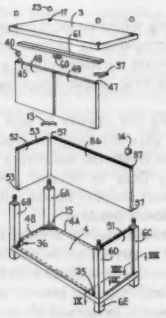
each said rear corner clip including

(1) a substantially horizontal platelike base member which overlies the lower or upper surface of the respective shelf,

(2) a first panel-engaging flange fixed to said base member adjacent an outer edge thereof and projecting vertically therefrom,

(3) a second panel-engaging flange fixed to said base member adjacent an outer edge thereof and projecting vertically therefrom, said first and second panel-engaging flanges being substantially perpendicular to one another and engageable within the grooves formed in the edges of the adjacent back and end panels, and

(4) a positioning flange fixed to said base member adjacent an outer edge thereof and projecting vertically therefrom, said positioning flange extending horizontally between and being fixedly connected to the adjacent ends of said panel-engaging flanges, said positioning flange having a contoured outer surface which defines a substantially concave recess which faces outwardly so



that said positioning flange fits snugly against and partially embraces the adjacent rear corner post;

each said front corner clip including

(1) a substantially horizontal platelike base member which overlies the lower or upper surface of the respective shelf,

(2) a panel-engaging flange fixed to said base member adjacent an outer edge thereof and projecting vertically therefrom, said panel-engaging flange being engageable within the groove formed in the edge of the adjacent end panel,

(3) a positioning flange fixed to said base member adjacent an outer edge thereof and projecting vertically therefrom, said positioning flange being fixed to an adjacent edge of said panel-engaging flange so that the latter projects in transverse relationship to the positioning flange, said positioning flange having a contoured outer surface which defines a concave recess so that the positioning flange fits snugly against and partially embraces the adjacent front corner post, and

(4) a pivot post fixed to said base member and projecting vertically therefrom in the same direction as said panel-engaging flange for defining a vertical hinge axis for one of the doors, the corner post being spaced horizontally from the positioning flange and positioned inwardly from and forwardly of the panel-engaging flange, two said pivot posts as defined on the upper and lower front corner clips as disposed adjacent one front corner post being aligned on a common axis, and each door having axially aligned recesses at their upper and lower edges for receiving said respective pair of aligned pivot posts for holding the respective door in pivotal opening and closing relationship with respect to said shelves;

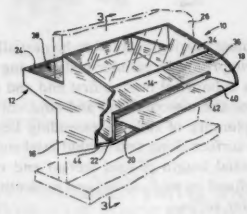
said front and rear corner clips all being disposed in their entirety within the closed cabinet defined by said panels, doors, posts and shelves.

4,318,577

BULK FOOD DISPLAY BIN

Romanino Vona, Milton, Canada, assignor to Bunsmaster Bakeries of America, Inc., Milton, Canada

Filed May 15, 1980, Ser. No. 150,203
Claims priority, application Canada, May 12, 1980, 351706
Int. Cl.³ A47B *71/00*
U.S. Cl. 312—284 **11 Claims**



1. A bulk food display bin for displaying buns and the like, the bin comprising:

a tray having a downwardly and forwardly inclined floor and front and side peripheral walls, the floor defining a lower opening adjacent to said front wall for the passage of debris therethrough wherein said lower opening is narrower than the food to be displayed in the bin to prevent passage through said lower opening of the food to be displayed;

a sneeze shield located above and over the tray floor, the sneeze shield and said front wall defining a generally vertical bun removal opening, the sneeze shield and said floor defining a rear bun loading opening; and

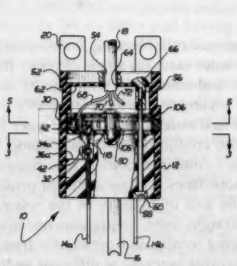
means located below said lower opening for receiving debris passing therethrough.

4,318,578

ELECTRICAL CONNECTOR WITH GROUND FAULT DETECTOR

John E. Ericson, Moreland Hills, and Earl Mahnke, Eastlake, both of Ohio, assignors to The Ericson Manufacturing Company, Willoughby, Ohio

Filed Jan. 21, 1980, Ser. No. 113,534
Int. Cl.³ H01R *13/717*
U.S. Cl. 339—14 P **10 Claims**



1. An electrical connector for cooperating with a second

electrical connector to complete a circuit therebetween, said electrical connector comprising:

a housing including at least first and second pieces assemblable into a closed housing having a chamber therein, and disassemblable to expose said chamber, and first electrical contacts accessible from said chamber and adapted to cooperate with contacts of the cooperating second electrical connector to complete said circuit therebetween;

a unitary ground fault detector and indicator assembly adapted to fit in said chamber of said housing, said assembly including a support member enclosing a lamp and circuitry for causing the lamp to light in response to proper grounding, and further including a plurality of contact means connected to said lamp and circuitry and adapted to contact said first electrical contacts; and

means for removably securing said unitary assembly within said housing and for effecting electrical contact between said first contacts and said contact means when said unitary assembly is assembled in said housing, whereby said ground fault detector assembly may be readily removed for replacement by disassembly of said housing.

4,318,579

ELECTRICAL CONNECTION SYSTEM INTERLOCK

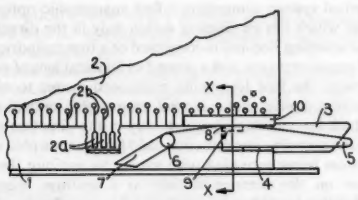
Ronald O. Tudberry, Crewe, England, assignor to International Computers Limited, London, England

Filed Mar. 26, 1980, Ser. No. 134,104

Claims priority, application United Kingdom, Apr. 17, 1979, 13273/79

Int. Cl.[3] **H01R** *13/62*

U.S. Cl. 339—74 R **4 Claims**



1. An electrical connector system including first and second electrical connector elements, the first having an edge region with first contacts, and the second connector element including a slot like opening for receiving the edge region, and having a plurality of second contacts intended for electrical connection with the first contacts upon operational engagement of the edge region within the slot in the second connector element; a first lever means pivoted to the second connector element for adjusting the latter between a first position in which the edge portion can be readily inserted into or removed from the slot without any contact pressure being produced between the first and second contacts and a second position in which a required contact pressure is obtained; and an interlocking means for controlling operation of the first lever and including a second lever pivoted to the second connector element and having a first setting in which it is adapted to interlock with the first lever means to retain it in its first position and an interlock element provided upon the first connector element, so as to be co-operable with the second lever to hold it in said first setting unit until the edge region is correctly operationally positioned within the slot, and such that when said correct position is attained to allow the second lever to be moveable to a second setting in which it releases the interlock with the first lever to permit the latter to be moved to the second position thereof to allow the second connector element to produce the desired contact pressure and also to prevent the second lever from being returned to the first position whilst contact pressure is being exerted.

4,318,580

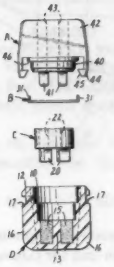
HAND APPLIED ROTARY CONNECTOR

Larry D. Fleisher, Maplewood, and Arne H. Mayala, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 9, 1980, Ser. No. 157,554

Int. Cl.[3] **H01R** *4/24*

U.S. Cl. 339—98 **5 Claims**



1. A rotary electrical connector comprising: (1) an insulating container having a laterally notched rim and opposed radially extending handles, the open interior being in three cylindrical sections of decreasing diameter, the wall of the outermost section being oppositely grooved to provide first axial grooves extending through said rim, the innermost section containing a central post and two oppositely disposed fixed vanes connecting post and wall; (2) a doubly perforate insulting plunger fitting said central section, having two oppositely disposed vanes extending axially from one face for fitting within said innermost section alongside said fixed vanes, and grooved to provide oppositely disposed second axial grooves; (3) a generally rectangular flat plate contact element fitting within said outermost section, having opposed longitudinal corner extensions fitting within said first axial grooves, slotted symmetrically from each longitudinal edge to provide a semicircular opening leading into a narrow arcuate slot which is extended longitudinally and thence transversely of said plate and forming a deflectable outer beam and an opposed deformable inner beam; and (4) an insulating doubly perforate plug fitting within said outermost section and against said rim, having inwardly extending pegs fitting within said second axial grooves and having an outwardly extending handle member having oppositely disposed retaining legs; the perforations in said plunger and plug being axially disposed and in alignment with said semicircular openings for entry of wire ends, and said plunger and plug being rotatable with respect to said container and plate for forcing said wire ends into said arcuate slots and into electrical contact with the edges defining said slots.

4,318,581

OPTICAL HOLOGRAPHIC CONTENT-ADDRESSABLE MEMORY SYSTEM FOR TRUTH TABLE LOOK-UP PROCESSING

Clark C. Guest, and Thomas K. Gaylord, both of Atlanta, Ga., assignors to Georgia Tech Research Institute, Atlanta, Ga.

Filed May 13, 1980, Ser. No. 149,540

Int. Cl.[3] **G06F** *7/56;* **G02B** *5/32*

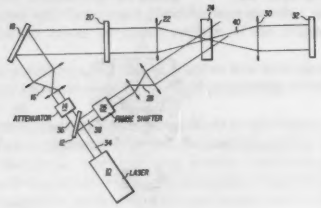
U.S. Cl. 350—3.74 **21 Claims**

1. A numerical optical processor, comprising:

a holographic storage medium, said medium storing at least one hologram representing relationships between a plurality of digital inputs and outputs in the form of a plurality of binary truth tables, said at least one hologram being formed by an interference pattern between a first object beam of coherent light coded with said truth table information and a first reference beam of coherent light, said

storage medium acting to transmit at least a portion of light signals incident thereon, said storage medium operating as a content addressable memory;

input means for receiving at least one digital input word and for coding a second object beam of coherent light with said at least one input word, said coded second object beam being incident upon said storage medium; and



detector means for receiving light signals passing through said storage medium and for converting said light signals into at least one electronic output word in digital form;

whereby said optical processor performs a numerical operation upon said at least one digital input word.

4,318,582

TWO-DIMENSIONAL SCANNING APPARATUS

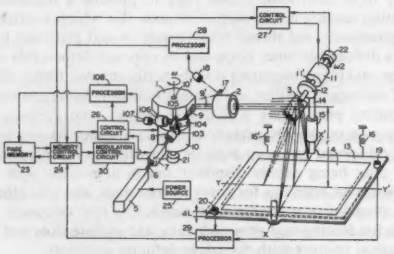
Kazuo Minoura, Yokohama; Takehiko Kiyohara, Zama, and Haruo Uchiyama, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 3, 1980, Ser. No. 109,274

Claims priority, application Japan, Jan. 17, 1979, 54-3035

Int. Cl.³ G02B *27/17*

U.S. Cl. 350—6.6 **8 Claims**



1. A two-dimensional scanning apparatus comprising:

means for supplying a light beam;

first deflecting means for deflecting said beam and carrying out primary scanning on a surface to be scanned;

second deflecting means for deflecting the beam in a plane orthogonal to the plane in which the beam is deflected by said first deflecting means and carrying out secondary scanning in the direction orthogonal to the direction of said primary scanning on said scanned surface;

an image forming optical system disposed between said first and second deflecting means; and

mechanical means for moving said scanned surface in the direction orthogonal to said surface in synchronism with the deflecting motion of said second deflecting means in such manner that the position of the focal point of said optical system may always lie on said scanned surface.

4,318,583

OPTICAL SCANNING SYSTEM WITH ANAMORPHIC OPTICAL SYSTEM

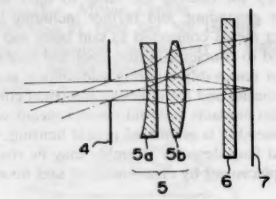
Takeshi Goshima, Tokyo, and Kazuo Minoura, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 929,241, Jul. 31, 1978, abandoned. This application Mar. 3, 1980, Ser. No. 126,347

Claims priority, application Japan, Aug. 5, 1977, 52-93996; Jul. 18, 1978, 53-87329

Int. Cl.³ G02B *27/17*

U.S. Cl. 350—6.6 **3 Claims**



1. An optical scanning system comprising:

a light source;

a light deflecting device for receiving a beam of light coming from said light source and deflecting the received beam in a predetermined direction;

a surface scanned by the beam of light deflected by said deflecting device; and

an anamorphic optical system disposed between said deflecting device and said scanned surface, said anamorphic optical system comprising a first anamorphic optical system which has an imaging action only in the direction of the scanning line and is composed of a first cylindrical lens of negative power and a second cylindrical lens of positive power, the first lens being positioned nearer to said deflecting device, and a second anamorphic optical system which has an imaging action only in the direction normal to the scanning line direction, said first anamorphic optical system being provided with means for moving the beam spot on the scanned surface at a uniform speed and wherein the deflection surface of said deflecting device and said scanned surface are disposed optically conjugative with each other relative to said second anamorphic optical system.

4,318,584

IMAGE STABILIZED OPTICAL SYSTEM

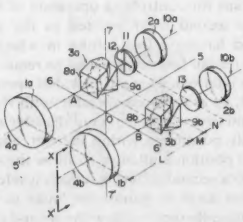
Kunio Ando, Yono; Takemi Saito, Kawagoe; Seiji Toyama, Ageo, and Syuichi Yamataka, Ibaragi, all of Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Jan. 15, 1980, Ser. No. 112,234

Claims priority, application Japan, Jan. 20, 1979, 54-5806

Int. Cl.³ G02B *27/32, 23/00*

U.S. Cl. 350—10 **5 Claims**



1. An image stabilized optical system comprising a tele-

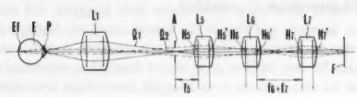
scopic optical system consisting of an objective, an eyepiece, an erect prism located therebetween and a reticle located on the focal plane of the objective characterized in that the objective, the eyepiece and the reticle are fixed to a casing of the image stabilized optical system, and the erect prism is capable of having its incident light optical axis and its emanating light optical axis aligned with each other and is mounted on the casing by means of gimbals provided with a rotor and two axes of rotation intersecting at right angle with each other, the two axes of rotation of the gimbals being included in a plane which is in perpendicular to the main optical axis of the telescopic optical system and passes through the middle point of the total distance which is the sum of the optical distance from said objective to the entrance face of said erect prism, the mechanical distance from the entrance face to the exit face of said erect prism and the optical distance from the exit face to the reticle.

4,318,585

OPTICAL SYSTEM WITH AN AFOCAL FOCUSING GROUP

Isao Matsumura, Yokosuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1979, Ser. No. 65,004
Claims priority, application Japan, Aug. 15, 1978, 53-99365
Int. Cl.³ A61B *3/12*; G02B *27/40*
U.S. Cl. 350—46 **13 Claims**



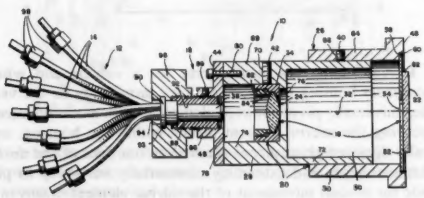
1. An optical system with a focusing group comprising:
a fixed lens for substantially collimating the principal rays;
an aperture stop; and
a movable lens group consisting of a plural number of lenses for constituting an afocal optical system for the whole movement range, movable along the direction for focusing and arranged at the image side of the fixed lens.

4,318,586

DISTRIBUTIVE COUPLERS FOR FIBER OPTICS

Lawrence J. Coyne, Danbury, Conn., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 938,585, Aug. 31, 1978, abandoned. This application Apr. 3, 1980, Ser. No. 136,883
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.16 **22 Claims**



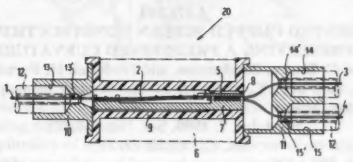
12. A distributive coupler for use with a set of optical fibers, comprising:
a housing including means for supporting the end portions of said optical fibers;
means for directing light transmitted through any one or more of said optical fibers onto said set of optical fibers, said light directing means including means for reflecting transmitted light toward said set of optical fibers and means for focusing reflected light onto said set of optical fibers, said light focusing means and said light reflecting means being disposed within said housing with said light focusing means between said fiber supporting means and said light reflecting means, said transmitted light being directed along a light transmission path within said housing; and
means for readily adjusting said directing means axially of said light transmission path for adjusting the optical length of said light transmission path to produce uniform illumination of said set of optical fibers.

4,318,587

ELECTRICALLY ACTUATED SWITCH FOR LIGHT WAVEGUIDES

Erwin Grassl, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 18, 1980, Ser. No. 113,188
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1979, 2903848
Int. Cl.³ G02B *7/26*; H01H *1/66*
U.S. Cl. 350—96.20 **4 Claims**



1. In an electrically actuated switch for opening and closing an optical connection between a first light conducting waveguide with a first end face and at least a second light conducting waveguide with a second end face, said switch including a mobile switching blade supporting the first waveguide in a housing with its end face being adjacent the free end of the blade, means, which include an electric coil being mounted on the housing, for changing the magnetic field to move the free end of the blade from a rest position to a second position, and means for supporting the second waveguide with the second end face adjacent and aligned with the first end face when the blade is in one of said rest and second positions to form an optical connection and the end faces are out of alignment to open the connection between the two waveguides when the blade is in the other of said rest and second positions, the improvements comprising a common basic member comprising a one piece member, said mobile switching blade and said means for supporting the second waveguide being secured to said one piece common basic member, and means for engaging one end of the basic member to mount said basic member in the housing with the remaining portion of the basic member being free of engagement with said housing.

4,318,588

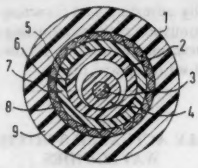
OPTICAL COMMUNICATION CABLE HAVING A REINFORCED CASING

Guenter Zeidler, Unterpfaffenhofen; Ulrich Oestreich, and Gernot Schoeber, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 8, 1979, Ser. No. 46,696
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1978, 2825845
Int. Cl.³ G02B *5/16*
U.S. Cl. 350—96.23 **10 Claims**

7. An optical communication cable comprising:
at least one optical transmission element;
a double-layer synthetic material buffer tube relatively loosely positioned about said transmission element;
a spun covering comprised of intertwined glass fiber yarn,

each fiber yarn having a length of lay of about 100 mm and being coated with an adhesive, said spun covering being positioned about said tube; and



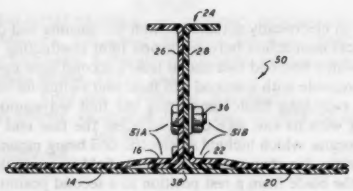
a relatively soft outer casing composed of thermoplastic polyurethane rubber and having a modulus of elasticity smaller than about 500 N/mm^2, said outer casing being only partially bonded periodically with outer fiber surfaces of said spun covering.

4,318,589

SEGMENTED CURVED SCREEN CONSTRUCTION FOR PRESERVING A PREDEFINED CURVATURE

William C. Brown, Binghamton, and Frederick H. Purtell, Endwell, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,871
Int. Cl.^{3} G03B *21/56*
U.S. Cl. 350—125 **17 Claims**



1. A segmented curved screen for an image projection system which maintains a predefined curvature of the screen, said screen comprising:

(a) a first screen segment having a first curved surface and a first lip having a first lip surface of predetermined configuration, said lip extending along an edge of said first curved surface;

(b) a second screen segment having a second curved surface and a second lip having a second lip surface of predetermined configuration; said second lip extending along an edge of said second curved surface;

(c) an extended element having a third curved surface, said third curved surface having a configuration corresponding to said predetermined configuration of said first lip surface and positioned in a mating relationship with said first lip surface, and a fourth curved surface, said fourth curved surface having a configuration corresponding to the predetermined configuration of said second lip surface and positioned in a mating relationship with said second lip surface;

(d) joining means to connect said first lip surface with said third curved surface, and said second lip surface with said fourth curved surface, in a manner that forms an exposed channel between said first and second screen segments; and

(e) a substance filling said exposed channel providing a continuous transition surface between said first and second screen segment surfaces, whereby a screen of predefined curvature is provided.

17. A method for constructing a segmented curved screen for an image projection system which maintains a predefined curvature of the screen, comprising the steps of:

(a) providing a first screen segment having a first curved surface and a first lip having a first lip surface of predetermined configuration, said lip extending along an edge of said first curved surface;

(b) providing a second screen segment having a second curved surface, and a second lip having a second lip surface of predetermined configuration; said second lip extending along an edge of said second curved surface;

(c) providing an extended element having a third curved surface, said third curved surface having a configuration corresponding to said predetermined configuration of said first lip surface and positioned in a mating relationship with said first lip surface, and a fourth curved surface, said fourth curved surface having a configuration corresponding to said predetermined configuration of said second lip surface and positioned in a mating relationship with said second lip surface;

(d) joining said first lip surface with said third curved surface, and said second lip surface with said fourth curved surface, in a manner that forms an exposed channel between said first and second screen segments; and

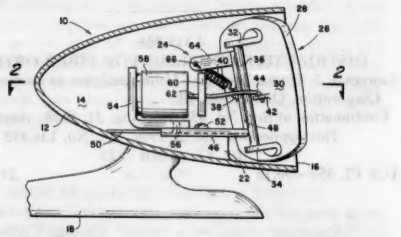
(e) filling said exposed channel with a substance providing a continuous transition surface between said first and second screen segment surfaces, whereby a screen of predefined curvature is provided.

4,318,590

WIDE SCAN REARVIEW MIRROR

William W. Hanley, Rte. 1, Box 353, Grove, Okla. 74344

Continuation-in-part of Ser. No. 893,283, Apr. 5, 1978, abandoned. This application Feb. 28, 1980, Ser. No. 125,494
Int. Cl.^{3} B60R *1/08*
U.S. Cl. 350—289 **8 Claims**

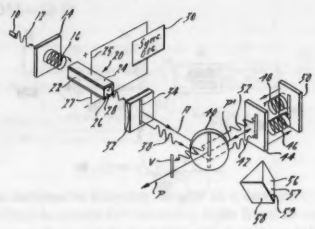


1. A scanning rearview mirror for a vehicle and which comprises housing means adapted for installation on the vehicle, universally pivotal mirror element means, mounting means securing the mirror element means within the housing, centrally disposed pivot means secured on one face of the mirror element means and extending substantially vertically to provide for pivotal movement of the mirror element means in at least one direction, spring means operably connected between the mounting means and the mirror element means for constantly urging the mirror element in one pivotal direction, solenoid means operably connected between the electrical system of the vehicle and the mirror element means for selective intermittent pivoting of the mirror element means against the force of the spring means to provide a substantially horizontal scanning pattern for the mirror element means, said mounting means being removably engageable with the housing means for removably securing the mirror element means therein.

4,318,591
POLARIZATION SWITCHED IMAGE ROTATOR

Paul B. Elterman, Costa Mesa, Calif., assignor to Ford Aerospace & Communications Corp., Detroit, Mich.

Filed Jun. 10, 1980, Ser. No. 158,104
Int. Cl.[3] F41G 9/00; G02F 1/03
U.S. Cl. 350—374 17 Claims

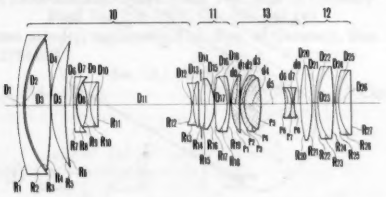


1. An image rotator comprising in combination:
means for generating a beam of electromagnetic radiation in a first state of plane polarization;
means for selectively converting said beam of radiation to a second state of plane polarization, orthogonally oriented with respect to said first state; and
means for imaging said selectively polarized beam into an elongated cross-sectional configuration aligned in a first one of two orthogonally oriented directions when said selectively polarized beam is in a first one of said plane polarized states and aligned in a second one of said two orthogonally oriented directions when said selectively polarized beam is in a second one of said plane polarized states.

4,318,592
LENS SYSTEM WITH ATTACHMENT LENS REMOVABLY ATTACHED

Kazuo Tanaka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1979, Ser. No. 28,442
Claims priority, application Japan, Apr. 13, 1978, 53-43565; Apr. 17, 1978, 53-45102
Int. Cl.[3] G02B 15/02
U.S. Cl. 350—427 7 Claims

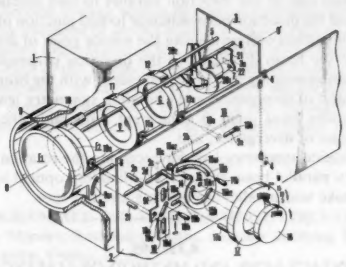


1. A lens system with an attachment lens comprising:
front optical means having a primary principal plane and a secondary principal plane;
an imaging lens group positioned in the rear of said front optical means and consisting of a fixed front sub-group and a fixed rear sub-group in this order; and
an attachment lens inserted into and removable from an air space between said front sub-group and said rear lens group and having a positive power and also having a primary principal plane and a secondary principal plane;
whereby a primary principal plane of said sub-group lies on the image side of the secondary principal plane of said front optical means, and the primary principal plane of said attachment lens lies on the object side of a secondary principal plane of said front sub-group.

4,318,593
ZOOM LENS ASSEMBLY WITH TWO MOVABLE FOCUSING LENS GROUPS

Sadahiko Tsuji; Noritsugu Hirata, both of Yokohama, and Kazuo Tanaka, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1979, Ser. No. 92,843
Claims priority, application Japan, Nov. 17, 1978, 53-141851
Int. Cl.[3] G02B 7/10
U.S. Cl. 350—430 15 Claims

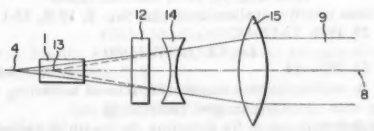


1. A device for focus adjustment of a lens assembly capable of zooming comprising:
(a) a plurality of optical lens groups, a focusing arrangement consisting at least of first and second focusing lens groups, a holding member for said lens groups;
(b) a focusing operation member for moving the first and the second focusing lens groups to perform a focusing operation;
(c) first movement control means for controlling the movement of one of the focusing lens groups a predetermined amount in accordance with the adjusting operation of the focusing operation member; and
(d) a second movement control means engaging the first movement control means so as to control the movement of the other focusing lens group a predetermined amount in accordance with the adjusting operation of the focusing operation member, so that focus adjustment is carried out by movement of the first and the second focusing lens groups.

4,318,594
BEAM SHAPING OPTICAL SYSTEM

Hiroshi Hanada, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 913,225, Jun. 6, 1978, Pat. No. 4,203,652, which is a continuation of Ser. No. 769,728, Feb. 17, 1977, abandoned. This application Jan. 29, 1980, Ser. No. 116,395
Claims priority, application Japan, Feb. 15, 1977, 52-15341; Feb. 15, 1977, 52-15343; Feb. 15, 1977, 52-15344
The portion of the term of this patent subsequent to Mar. 20, 1997, has been disclaimed.
Int. Cl.[3] G02B 3/06; H01S 3/00
U.S. Cl. 350—433 5 Claims



1. A beam shaping optical system for making the beam from a semiconductor laser into a circular spot, comprising:
a semiconductor laser element, the source point of diver-

gence of the beam from the exit surface of said element in a direction parallel to the junction plane of said element lying at a position on a certain axis remote from said exit surface, the source point of divergence of said beam in a direction perpendicular to said junction plane lying at a position on said certain axis adjacent said exit surface;

a collimating optical system for making the beam from said semiconductor laser element into a rotation symmetry parallel beam, said collimating optical system including, a cylindrical system whose generating line is coincident with one of the direction parallel to said junction plane and the direction perpendicular to said junction plane, said cylindrical system causing the source point of divergence of the beam diverging in the direction perpendicular to said generating line to be coincident with the other source point of divergence, and a rotation symmetry lens system whose focal point is coincident with said other source point of divergence; and

a rotation symmetry lens for receiving the rotation symmetry parallel beam from said collimating optical system to make said parallel beam into a circular spot.

4,318,595

CONTACT LENS AND METHOD OF MAKING THE SAME

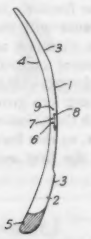
Herbert C. Van der Kolk, and Martyn W. Davy, both of Auckland, New Zealand, assignors to Hirst Contact Lens Limited, Auckland, New Zealand

Filed Aug. 28, 1979, Ser. No. 70,529

Claims priority, application New Zealand, Sep. 4, 1978, 188325

Int. Cl.³ G02C *7/04*

U.S. Cl. 351—160 H **9 Claims**



5. A contact lens comprising a lenticular anterior surface, a restricted central zone and a surrounding annular carrier, a toric anterior surface over said restricted central zone of the lens and an independent prims part of the lens over the carrier only of said lenticular anterior surface so that in use the center of gravity of the lens is below the center of rotation.

4,318,596

SOUND MOTION PICTURE CAMERA

Hiroyuki Takimoto, Urawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1979, Ser. No. 71,545

Claims priority, application Japan, Sep. 8, 1978, 53-111067; Sep. 29, 1978, 53-120487

Int. Cl.³ G03B *31/00*

U.S. Cl. 352—14 **4 Claims**

1. A motion picture camera capable of recording sound along with recording images, comprising:

(a) detecting means for detecting the length of looped film;

(b) an actuable release;

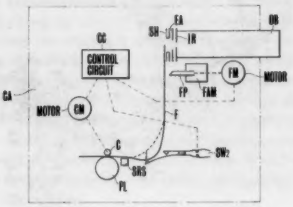
(c) a film motor;

(d) a capstan motor;

(e) a timer circuit coupled to the release for operating in response to actuation of the release and for producing an output after a predetermined time is counted;

(f) a film motor drive circuit coupled to said timer circuit for initiating operation of said film motor in response to said timer circuit;

(g) a capstan motor drive circuit coupled to the capstan



motor for initiating operation of said capstan motor in response to the output of said timer circuit when said detecting means detects that the loop length is shorter than a predetermined value and for initiating operation of said capstan motor independently of the output of said timer circuit when the detecting means detects that the loop length is longer than the predetermined value.

4,318,597

OPTICAL PRINT HEAD FOR OPTICAL PRINTING DEVICES

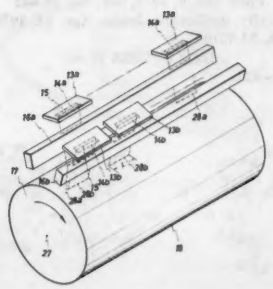
Shintaro Kotani; Ichimatsu Abiko, both of Tokyo; Rikuo Takano, Zushi; Yasushi Hoshino, Yokosuka; Yukio Tokunaga, Yokosuka, and Kazuyoshi Tateishi, Yokosuka, all of Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Aug. 15, 1980, Ser. No. 178,528

Claims priority, application Japan, Aug. 21, 1979, 54-105485

Int. Cl.³ B41B *13/00*; G03B *27/00*

U.S. Cl. 354—5 **7 Claims**



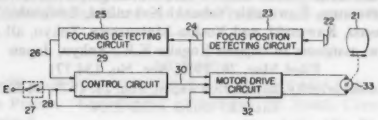
1. An optical print head for optical printing devices comprising light emitting device arrays having a plurality of light emitting devices selectively energized and arranged in a row, said light emitting device arrays being arranged in a plurality of rows with said light emitting devices aligned in a common direction with said light emitting device arrays, and a plurality of graded index optical fiber arrays causing light images from said light emitting devices to be formed on a photosensitive surface of a photosensitive means, said graded index optical fiber arrays having optical axes directed perpendicularly to said photosensitive surface and being arranged opposite to each row of said light emitting device arrays and having an equimultiple lens power, said photosensitive surface rotatable on a drum having an axis of rotation, said optical axis of said optical fiber arrays being perpendicular to said axis of rotation.

4,318,598

AUTOMATIC FOCUSING DEVICE IN A CAMERA

Toru Fukuhara, Isehara; Akira Ogasawara, Yokohama, and Makoto Kimura, Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 18, 1979, Ser. No. 104,849
Claims priority, application Japan, Dec. 29, 1978, 53/163080
Int. Cl.[3] G03B *13/18*
U.S. Cl. 354—23 D 2 Claims



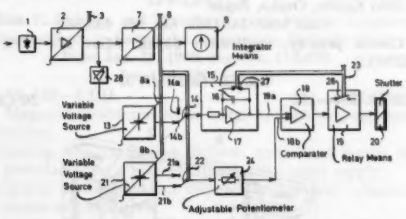
1. In an automatic focusing device in a camera comprising:
photo electric means for receiving light from an object to be photographed and passed through a picture-taking lens;
focusing position detecting means for detecting in-focus and out-of-focus directons of the picture-taking lens and producing an output signal representative of a focusing position of the picture-taking lens;
a motor for driving the picture-taking lens in the direction of the optical axis; and
control means for energizing the motor when said focusing position signal is representative of out-of-focus and for stopping the motor when the focusing position signal is representative of in-focus, the improvement comprising:
(a) focusing detecting means to which said focusing position signal is applied and which produces an in-focus signal when substantial in-focus is detected;
(b) switch means for producing a trigger signal for initiating energization of the motor in association with depression of a shutter release button of the camera;
(c) a circuit for producing a signal for stopping the motor from the reception of the in-focusing signal; and
(d) means for displaying the in-focus condition of the picture-taking lens during the reception of both said trigger signal and the stopping signal from the circuit.

4,318,599

APPARATUS FOR EXPOSURE CONTROL FOR MICROPHOTOGRAPHY

Adolf Elger, Oberkochen, Fed. Rep. of Germany, assignor to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Nov. 28, 1978, Ser. No. 964,143
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1977, 2756137
Int. Cl.[3] G03B *7/04*
U.S. Cl. 354—51 7 Claims



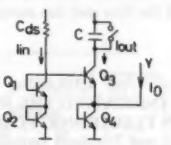
1. In exposure-control apparatus for use in microphotography in which the signal produced by a radiation receiver is converted by a signal amplifier into a voltage and is fed via an interposed network to an indicating instrument, and in which there is provided an operating element by which the network may be modified until a predetermined deflection of the instrument is obtained, and with which at the same time relay means which determines the exposure time is so adjusted that upon the subsequent release to initiate the exposure, said relay is operated for the correct exposure time, the improvement in which said relay means includes an integrator and a source of selectively variable voltage, selectively operable switch means for selective connection of the integrator input to the output of said voltage source or to the output of said signal amplifier, and comparator means having a first input connected to the output of said integrator and a second input including threshold-control means, and an exposure-control relay connected to the output of said comparator, said threshold-control means including a second voltage source having an operating element for selective variation of second-source voltage, said operating elements being interconnected for adjustment of the threshold output voltage of the threshold-control means in coordination with modification of said network, thereby modifying said threshold output voltage as a function of the exposure time determined upon achievement of said predetermined deflection.

4,318,600

PROGRAMMED SHUTTER CONTROL CIRCUIT

Toshihide Miyake, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 5, 1981, Ser. No. 231,853
Claims priority, application Japan, Feb. 5, 1980, 55-14637
Int. Cl.[3] G03B *7/08*
U.S. Cl. 354—51 5 Claims



1. An electronic shutter control circuit comprising:
a photoconductive material having a γ value;
a first transistor having its base connected to its collector, a photo output current produced by said photoconductive material being applied to said first transistor;
a second transistor having its base connected to its collector, said second transistor being serially connected to said first transistor;
a third transistor having its base connected to the collector of said first transistor;
a fourth transistor having its base connected to its collector, said fourth transistor being serially coupled to said third transistor;
current supplier means connected to said fourth transistor for providing a current;
capacitor means serially coupled to said third transistor for condensing charge; and
means connected to said capacitor means for detecting a charge amount condensed by said capacitor and for providing shutter operation signals used for operation of a shutter mechanism.

4,318,601

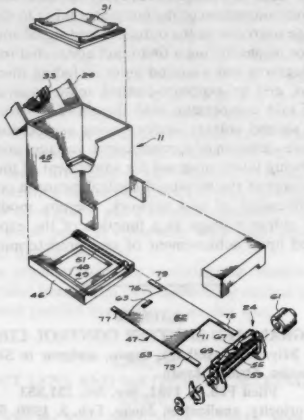
FILM MAGAZINE

William A. Martin, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 4, 1980, Ser. No. 212,924
Int. Cl.[3] G03B *17/52, 19/10*
U.S. Cl. 354—86 6 Claims

1. In a magazine for receiving a stack of photographic film units, and including a shuttle adapted to reciprocate to successively: (a) release successive film units from the stack for movement into an exposure position, (b) support the released

film units for exposure, and (c) remove the exposed film units from the exposure position and move them into a processing mechanism which includes means for advancing the film units through the mechanism, the improvement comprising:



means responsive to the entry of the film unit into the processing mechanism for interrupting reciprocation of the shuttle until the film unit has moved through the mechanism.

4,318,602

DEVICE FOR INDICATING THE READY CONDITION OF AN ELECTRONIC FLASH DEVICE

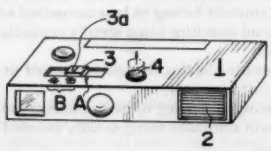
Akira Yamanaka, and Toshinori Imura, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 9, 1979, Ser. No. 28,763

Claims priority, application Japan, Apr. 10, 1978, 53/47235[U]

Int. Cl.³ G03B *17/20, 15/02*

U.S. Cl. 354—128 **20 Claims**



1. A combination photographic camera and photoflash device comprising:

a photographic camera mechanism;

a flash device including a light projecting member;

housing means for accomodating said photographic camera mechanism and said flash device;

a light emitting indication means illuminated in response to the readiness of said flash device to activate said light projecting member and characterized in being movable between a retracted position and projecting position in which at least a

part of said indication means projects from an outer surface of said housing means;

a power source switch for said flash device;

a manually operable means movable between an inoperative position for opening said switch and an operative position for closing said switch; and

advancing means for moving said indication means from said retracted to said projecting position in response to the movement of said manually operable means to said operative position.

4,318,603

FILM REWIND DEVICE IN A CAMERA

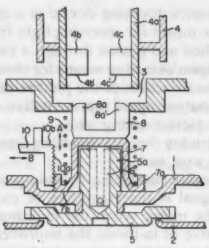
Koichi Daitoku, Tokyo; Hatsuo Sakamoto, Chiba; Nobuhiko Terui, Tokyo; Toshiaki Hozumi, Tokyo; Yoshio Sekine, Tokyo; Yukio Hyodo, Hiratsuka; Masanori Ichikawa, Tokyo; Masamichi Wada, Tokyo; Tsuyoshi Kudo, Tokyo; Manabu Nakamura, Kawasaki; Nobuaki Nakanishi, Kawasaki; Takeo Komai, Kawasaki, and Yoshio Matsuzawa, Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 28, 1980, Ser. No. 134,771

Claims priority, application Japan, Jan. 21, 1979, 54-52770[U]

Int. Cl.³ G03B *1/00, 1/04*

U.S. Cl. 354—214 **7 Claims**



1. A film rewind device in a camera in which a rewind coupling is automatically engaged with a cassette shaft in response to rewind operation, said device having a rotatable member having a spiral groove on its peripheral wall portion and said rewind coupling at the end of the shaft thereof, said rotatable member being slidable in axial direction and rotatable by the rewind operation, and a meshing member meshing with said spiral groove at the initial stage of the rewind operation to thereby slide said rotatable member in axial direction to cause said coupling to engage said cassette shaft, said meshing member being movable radially of said rotatable member and retractable from said spiral groove by said movement, the mesh engagement between said meshing member and said spiral groove being released in axial direction when said coupling engages said cassette shaft, so that said meshing member comes to support said rotatable member so as to block the return of said rotatable member in axial direction.

4,318,604

PLASTIC CAMERA BODY WITH METAL INSERT

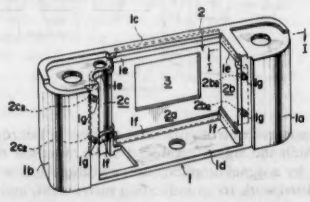
Toshio Kobori, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 24, 1980, Ser. No. 133,362

Claims priority, application Japan, Mar. 27, 1979, 54-40276[U]

Int. Cl.³ G03B *17/02*

U.S. Cl. 354—288 **20 Claims**



1. In a metal inserted plastic camera body which comprises a metal block having an exposure aperture, film pressure plate

abutting surfaces and film guide rails, and a plastic body proper with said metal block inserted therein and including a pair of opposite side housings and a pair of interconnecting portions interconnecting said side housings, the improvement wherein said interconnecting portions are formed with a pair of anchor means continuously extending along the opposite faces of the upper and lower borders of said metal block for anchoring said metal block to said plastic body proper by continuously and closely contacting both of said opposite faces, each of said anchor means being substantially equal in length in the portions thereof located in front of and behind said metal block.

4,318,605

STAND FOR PHOTOGRAPHIC APPARATUS

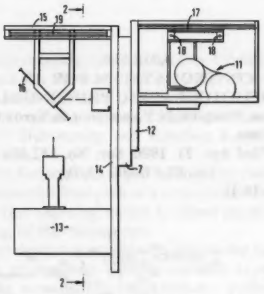
Zoran Perisic, "Gwynfenton", Whitewell, St. Teath, Cornwall, England

Filed Aug. 11, 1980, Ser. No. 177,232

Claims priority, application United Kingdom, Aug. 13, 1979, 28150/79

Int. Cl.³ G03B *17/00*; A63J *5/00*

U.S. Cl. 354—293 **11 Claims**



11. A photographic system comprising a support for photographic apparatus arranged for movement about three orthogonal axes, said axes intersecting one another substantially at a common point, a camera carried by said support and having a lens axis co-linear with one of said three axes and having a projection axis substantially perpendicular to the lens axis, and reflective means arranged to direct a projected image along the lens axis of the camera, said support being mounted on a carriage arranged for movement in a single plane in two directions perpendicular to one another.

4,318,606

MAGNETIC TONER IMAGING-MULTIPLEXING APPARATUS

William F. Buholtz, and Timothy R. Geis, both of Longwood, Fla., assignors to Burroughs Corporation, Orlando, Fla.

Filed Jan. 21, 1980, Ser. No. 113,670

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 DD **16 Claims**

1. Magnetic-conductive toner image-multiplexing apparatus comprising:

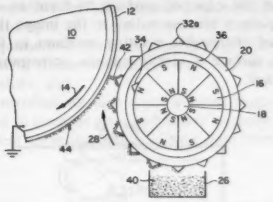
rotatable, non-conductive, hollow, cylindrical means disposed adjacent a magnetic-conductive toner supply,

magnetic assembly means disposed within said cylindrical means axially thereof,

magnetic field concentrating means disposed within said cylindrical means effective to concentrate magnetic flux from said magnetic assembly means normal to the axis of rotation of said cylindrical means,

helical means surrounding said cylindrical means operable upon rotation of said cylindrical means to cause toner from said supply to be threaded along said helical means, and

electrical circuit means operably connected to said helical means for applying suitable electrical potentials to said helical means effective to further amplify the magnetic flux generated by said magnetic assembly means and to



cause said toner to vertically bunch together adjacent to said field concentrating means for deposition onto an operably associated dielectric surface.

4,318,607

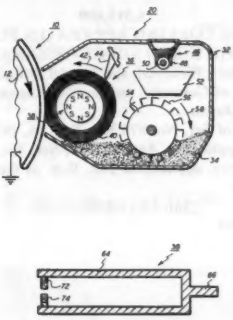
MAGNET FOR A DEVELOPMENT SYSTEM

Robert D. Bonham, Ontario, and Joseph Fantuzzo, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 14, 1980, Ser. No. 168,871

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 DD **17 Claims**



1. An apparatus for developing a latent image with developer material, including:

means for transporting the developer material closely adjacent to the latent image; and

a magnetic member, disposed interiorly of said transporting means, for attracting the developer material thereto, said magnetic member having a magnetic portion molded integrally with a support portion.

4,318,608

PORTABLE ELECTROSTATIC PHOTOCOPIER

John M. Payne, 13 Crowson Crescent, Northborough, Peterborough, England

Continuation of Ser. No. 865,640, Dec. 29, 1977, abandoned. This application Oct. 12, 1979, Ser. No. 84,329

Claims priority, application United Kingdom, Jan. 5, 1977, 140/77

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 CH **25 Claims**

1. Photocopying apparatus for producing a photocopy of a document comprising:

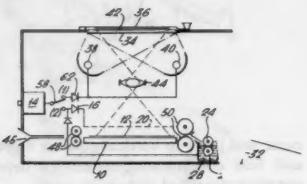
a member having a surface;

means for causing the surface to be charged electrically with

a charge of one polarity comprising a piezo electric crystal generator for generating an electrostatic charge of at least the said one polarity;

means for forming a light image of the document and directing it to the charged surface to form an electrostatic charge pattern corresponding to the image thereon;

a supply of chargeable printing medium to form on the charged surface a visible pattern corresponding to the light image;



a switching device which allows the charge of said one polarity onto to be applied to said surface; and

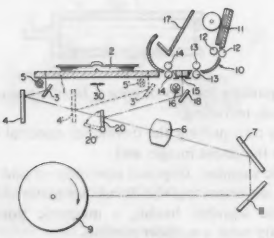
means for supplying to the printing medium a charge of opposite polarity to that of the charge applied to said surface to enhance the attraction of the printing medium to the charged surface comprising a second switching device and circuit means associated therewith for selecting said charge of opposite polarity to said one polarity.

4,318,609

DUAL MODE COPYING APPARATUS FOR COPYING THICK AND SHEET ORIGINALS

Wilhelm Knechtel, Biebertal, and Friedel Stillger, Wetzlar, both of Fed. Rep. of Germany, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 878,388, Feb. 16, 1978, abandoned.
This application Aug. 8, 1979, Ser. No. 64,905
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1977, 2709427
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—11 **2 Claims**



1. A copying apparatus comprising:

means for transporting a sheet original past a sheet original exposure station;

means providing a surface for supporting an original in the form of a book;

a photosensitive medium;

a lens for forming an image on said photosensitive medium;

a fixed mirror;

movable mirror means including first and second movable mirrors for scanning an original supported on said surface, wherein the scanned image of the original is reflected by said first and second mirrors, respectively, and is then directed through said lens to said photosensitive medium; and

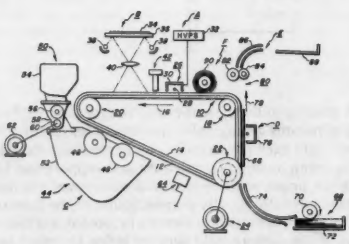
switching mirror means movably mounted adjacent a first optical path extending from said original supporting surface to said photosensitive medium through said scanning mirror means and said lens, said switching mirror means being selectively movable to a first position outside of said first optical path when the original supported on said surface is to be scanned by said scanning mirror means, and movable into a second position in which it is interposed in said first optical path between said first movable mirror and said lens, wherein said switching mirror means, when moved to said second position, forms, irrespective of the position of said movable mirror means, a second optical path for directing an image reflected by said fixed mirror from said sheet original exposure station onto said photosensitive medium through said lens.

4,318,610

CONTROL SYSTEM FOR AN ELECTROPHOTOGRAPHIC PRINTING MACHINE

Robert E. Grace, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 21, 1980, Ser. No. 142,490
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 D **4 Claims**



1. An apparatus for controlling the concentration of toner particles within a developer mixture of carrier granules and toner particles and regulating the charging of a photoconductive surface, including:

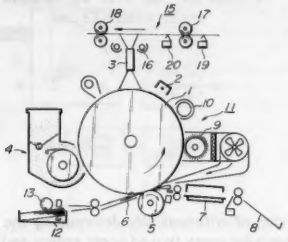
means for forming a first test area and a second test area on the photoconductive surface, said first test area and said second test area having toner particles deposited thereon with said first test area having a greater density of toner particles deposited thereon than said second test area; and

means, responsive to the density of toner particles deposited on the first test area, for controlling the concentration of toner particles in the developer mixture, said controlling means being resposive to the density of toner particles deposited on the second test area to regulate the charge level of the photoconductive surface, said controlling means comprising an infrared densitometer positioned adjacent the photoconductive surface, means, in communication with said infrared densitometer, for generating a toner dispense signal and a charging signal, said generating means produces an empty toner container signal in response to said generating means producing a plurality of successive toner dispense signals, and means, responsive to the charging signal, for charging the photoconductive surface.

4,318,611
DOCUMENT FEED CONTROL IN AN ELECTROPHOTOGRAPHIC SYSTEM

Hiroshi Tsuda, Mitaka; Kiyoshi Miyashita; Masaji Nishikawa, both of Hachioji; Akira Shimizu, Fuchu, and Muneo Kasuga, Hachioji, all of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Jan. 21, 1980, Ser. No. 113,689
Claims priority, application Japan, Feb. 7, 1979, 54/12326
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 SH 4 Claims



1. An electrophotographic apparatus having a manuscript feed path and for duplicating a plurality of successively fed manuscripts, said apparatus comprising:

manuscript exposing means arranged on the manuscript feed path for illuminating and scanning a manuscript to be duplicated;

manuscript feeding means for feeding the manuscript along the manuscript feed path in a given direction through said manuscript exposing means to effect an illuminating and scanning of the manuscript;

manuscript detecting means arranged on the manuscript feed path at an upstream position relative to the manuscript exposing means when viewed in the manuscript feeding direction to produce a manuscript detection signal;

control means for initiating a duplicating operation for a first manuscript among the plurality of said successively fed manuscripts in response to the manuscript detection signal generated by said manuscript detecting means upon detection of said first manuscript, and for initiating a duplicating operation for each of subsequent manuscripts in response to the manuscript detection signal of the relevant manuscript and a copy starting signal which is produced in accordance with the duplicating operation for the immediately preceding manuscript;

means for judging whether the current manuscript detection signal from the manuscript detecting means is that signal generated in response to the manuscript under duplication or that signal generated in response to the relevant manuscript to be duplicated next; and

means for inhibiting an initiation of a new duplicating operation when said judging means has judged that the current manuscript detection signal was generated in response to the manuscript under duplication.

4,318,612
HOT ROLL FUSER TEMPERATURE CONTROL

Robert C. Brannan, Longmont; Robert J. Fogoros, Boulder; Michael R. Headrick, Boulder; Ainis Krumins, Erie, and Robert F. Pryor, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 10, 1980, Ser. No. 168,825
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 FU 10 Claims

1. A hot roll temperature control for use with the hot roll fusing station of a xerographic reproduction device, comprising:

means responsive to an off-to-on transition of the reproduction device to institute a first active set point temperature for said fusing station;

temperature sensing means providing an output indicative of the actual temperature of said fusing station;

heating control means operable to heat said fusing station and controlled by said output and an active set point temperature;

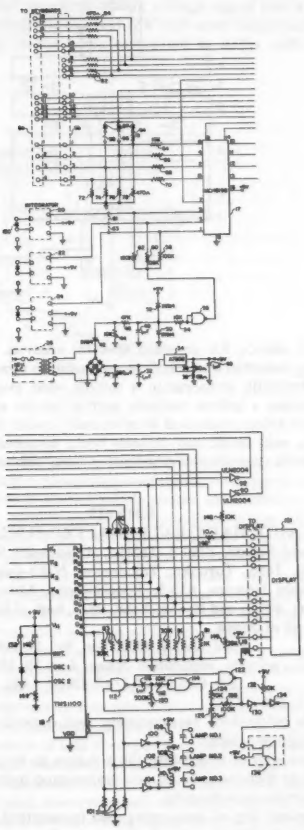
means responsive to the time interval required for said heating control means to achieve said first active set point temperature; and

means controlled by said time interval responsive means operable to institute a second active set point temperature dependent upon the length of said time interval.

4,318,613
UNIVERSAL LIGHT INTEGRATOR/TIMER FOR PHOTOGRAPHIC EQUIPMENT

William P. Waiwood, Cleveland, Ohio, assignor to The Nuarc Company, Inc., Chicago, Ill.

Filed Apr. 10, 1980, Ser. No. 138,923
Int. Cl.[3] G03B *27/72*
U.S. Cl. 355—68 16 Claims



1. In an arrangement for determining the exposure time for photographic plates, film, or the like, the combination of a source of light for illuminating a photographic plate or film, a photodiode positioned in the path of said light source, means connected to said photodiode for developing a voltage proportional to the current flowing through said diode in response to

light excitation from said source, means for converting said voltage into electrical pulses the rate of occurrence of which is proportional to the amplitude of said voltage, means for counting said electrical pulses, means controlled by said counting means for de-energizing said light source when a predetermined amount of light has been emitted thereby, means for developing timing pulses of a predetermined fixed frequency, and means for supplying said timing pulses to said counting means in place of said electrical pulses.

4,318,614

EMISSION SPECTRAL ANALYSIS DEVICE

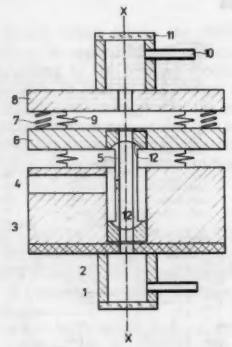
Heinz Falk, Berlin; Erwin Hoffman, Hohenneuendorf, and Christian Lüdke, Berlin, all of German Democratic Rep., assignors to Jenoptik Jena GmbH, Jena, German Democratic Rep.

Filed Apr. 25, 1980, Ser. No. 143,573

Claims priority, application German Democratic Rep., May 3, 1979, 212628

Int. Cl.³ G01N *21/71*

U.S. Cl. 356—311 **5 Claims**



1. A device for emission spectral analysis, comprising a heating potential and a hollow evaporation tube for receiving and thermally evaporating a sample, said evaporation tube comprising a hollow cathode, and an anode, said anode and cathode being connected to athermally excite the evaporated sample, said anode and cathode being mounted adjacent one another in spaced apart relationship along the axis of said tube.

4,318,615

AUTOMATIC RATE ANALYZING METHOD

Hisayuki Sagusa, 1280-4, Tabiko, Katsuta-shi; Hiroshi Hashimoto, 1616, Toyooka, Tokaimura, Naka-gun, Ibaraki-ken; Yasushi Nomura, 433-5, Yonesawacho, Mito-shi; Takehide Satou, 400-6, and Ryohei Yabe, 6623, both of Ichige, Katsuta-shi, all of Japan

Filed Apr. 6, 1979, Ser. No. 27,849

Claims priority, application Japan, Apr. 10, 1978, 53-41181

Int. Cl.³ G01J *3/42*; G01T *1/00*

U.S. Cl. 356—320 **9 Claims**

1. A method of automatically and optically analyzing a solution comprising:

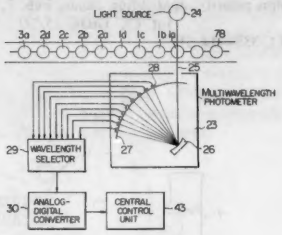
a first step of irradiating the solution to be analyzed with light thereby to produce a transmitted light quantity at a specific wavelength;

a second step of converting said transmitted light quantity into an electrical transmission signal;

a third step of producing a plurality of serial sample values by sampling said transmission signal at given intervals;

a fourth step of grouping said plurality of the serial sample values into groups each containing a predetermined number of said sample values selected in accordance with the positional number of said sample values, each of said groups including samples whose positional number deviates from that of the corresponding sample in adjacent groups by a number of the sample values smaller than said given number;

a fifth step of adding together said sample values in each of said groups thereby to produce sums each associated with each of said groups;



a sixth step of arithmetically determining the difference in said sums for every two adjacent groups and dividing said difference by the sum associated with one of said two adjacent groups thereby to produce quotients; and

a seventh step of adding together said quotients obtained for every two adjacent groups thereby to produce a total sum, representing the concentration of the item in concern.

4,318,616

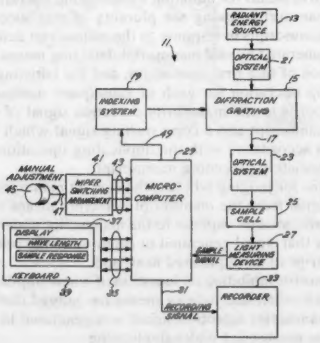
MANUAL WAVELENGTH ADJUSTMENT FOR A MICROPROCESSOR BASED SPECTROPHOTOMETER

Morteza M. Chamran, Elmhurst, Ill.; Larkin B. Scott, Fort Worth, Tex., and Paul B. Williams, Lombard, Ill., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 7, 1980, Ser. No. 128,029

Int. Cl.³ G01J *3/18*

U.S. Cl. 356—332 **8 Claims**



1. A spectrophotometer comprising:

monochromator means for providing monochromatic light at a sequence of wavelengths over a predetermined spectral range, said monochromator means being responsive to an indexing signal for successively changing in steps the wavelength of said monochromatic light in said sequence;

a sample cell;

a light measuring device;

means for directing said monochromatic light through said sample cell and onto said light measuring device;

control means manually actuable for generating a control signal, said control signal carrying information as to the extent of operator actuation;

microcomputer means responsive to said control signal for

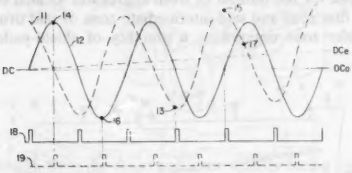
generating said indexing signal in accordance with said information, said indexing signal generated for changing the wavelength in a number of said steps proportional to said extent of operator actuation of said control means.

4,318,617

DC SHIFT ERROR CORRECTION FOR ELECTRO-OPTICAL MEASURING SYSTEM

Stefan Orsen, Fairlawn, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Dec. 14, 1979, Ser. No. 103,778
Int. Cl.[3] G01B 11/14
U.S. Cl. 356—373 9 Claims



1. A method of correcting errors resulting from the DC level shift, with respect to a preselected reference voltage, of a sinusoidal electrical signal generated in an electro-optical measuring system in response to displacement to be measured, said method comprising:

(a) generating a second signal in phase quadrature with said sinusoidal signal;

(b) gating a sampling amplitude value of said sinusoidal signal whenever the amplitude of said second signal equals said preselected reference voltage, thereby to obtain an indication of the amplitude values of said sinusoidal signal at substantially the maximum and minimum of a given cycle of said sinusoidal signal;

(c) averaging said sampled values to obtain an indication of the median amplitude of said sinusoidal signal cycle; and

(d) shifting the amplitude values of the sinusoidal signal half-cycle adjacent said median toward the value of said reference voltage by an amount equal to the difference between said median and said reference voltage.

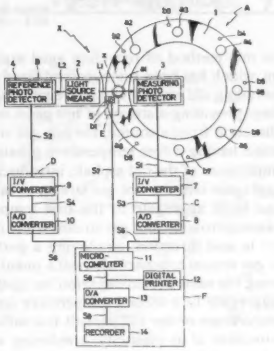
4,318,618

APPARATUS FOR AUTOMATICALLY MEASURING CHANGING VALUES OF ABSORBANCE

Yukio Ohtake, and Masahiro Nakamura, both of Tokyo, Japan, assignors to Ohtake Works Company, Ltd., Tokyo, Japan

Filed Mar. 3, 1980, Ser. No. 126,242
Claims priority, application Japan, Mar. 13, 1979, 54-28211
Int. Cl.[3] G01N 21/01
U.S. Cl. 356—435 1 Claim

1. Apparatus for automatically measuring changing values of absorbance in absorbance cell means comprising, conveying means moving said absorbance cell means along a fixed path and through a fixed measuring zone located along said fixed path, a light source means fixed in position at said measuring zone for emitting a non-splitting transmission light and a reference light from a common source of light, measuring photodetector means fixedly positioned at said measuring zone and optically aligned and spaced from said light source means such that said cell means, when moving along said fixed path, passes through said measuring zone between said light source means and said measuring photodetector means, said measuring zone being defined by an open space between said light source means and said measuring photodetector means such that when said cell means passes through said open space, said transmission light passes directly from said light source means through said cell means to said measuring photodetector means devoid of any other interference, said measuring photodetector means effecting a photoelectric conversion thereof into a measured value signal, a reference photodetector means optically aligned with said light source means receiving said reference light and effecting a photoelectric conversion into a reference value signal, said reference light passing directly from said light source means to said reference photodetector means devoid of any interference between said light source means and said reference photodetector means, a synchronizing command system for generating a synchronizing signal upon sensing the arrival of each cell means at said measuring zone, and operable means receiving said measuring value signal, said reference value signal and said synchronizing signal and calculating the values of absorbance of said cell means each time a cell means passes through said measuring zone, said values of absorbance being successively and accurately calculated without requiring compensation for variations of the light intensity of said light source means, said operable means comprising a measurement conversion system for encoding a measured value signal output from said measuring photodetector means with respect to each of said absorption cell means passing successively into said measuring zone, said measurement conversion system comprising an I/V converter means for converting a measured analog current signal from said measuring photodetector means into a measured analog voltage signal and an A/D converter means for encoding said measured analog voltage signal into a measured digital voltage signal, said I/V converter means and said A/D converter means being connected in series with each



other, said operable means further comprising a reference conversion system for encoding a reference value signal output from said reference photodetector means, said reference conversion system comprising an I/V converter means for converting a reference analog current signal from said reference photodetector means into a reference analog voltage signal, and an A/D converter means for encoding said reference analog voltage signal into a reference digital voltage signal, the last said I/V converter means and the last said A/D converter means being connected in series with each other, said operable means further comprising an arithmetic recording system including a microcomputer means for inputting in parallel the said signals respectively from said measurement conversion system, said reference conversion system and said synchronizing command system and calculating the value of change in absorbance of each of said absorbance cell means as the latter pass through said measuring zone, said microcomputer means comprising an absorbance calculating circuit which receives, when each of said absorption cell means has arrived at said measuring zone, a synchronizing signal from said synchronizing command system, a measured value signal from said measurement conversion system with respect to each of said absorption cell means, and a reference value signal from said reference conversion system and calculates the absorbance of each of said absorbance cell means, memory elements at designated addresses corresponding to said absorption cell means, said memory elements storing readably the initial value of said

absorbance of each of said absorption cell means, and a value-of-change-in-absorbance calculating circuit means for calculating the differences in absorbance values between successive absorbance values as calculated by said absorbance calculating circuit and said initial values stored in said memory elements.

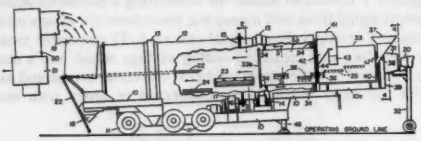
4,318,619
METHOD OF AND APPARATUS FOR ASPHALTIC CONCRETE HOT MIX RECYCLING

Philip J. Schlarmann, Scotch Grove, Iowa, assignor to Iowa Manufacturing Company of Cedar Rapids, Iowa, Cedar Rapids, Iowa

Continuation of Ser. No. 10,982, Feb. 9, 1979, abandoned, which is a division of Ser. No. 831,154, Sep. 7, 1977, Pat. No. 4,165,184, which is a continuation-in-part of Ser. No. 808,991, Jun. 21, 1977, abandoned. This application May 19, 1980, Ser. No. 151,273

Int. Cl.[3] **B28C** *5/06, 5/20, 5/46*

U.S. Cl. 366—4 **8 Claims**



1. In the hot mix method of recycling aged asphaltic concrete pavement which has been removed and sized to provide an aged mix including old asphalt and aggregate, the improvement comprising: providing a stream of hot gases moving in a downstream direction from a source, the hot gas stream at an upstream location having a first temperature greater than the destructive temperature of the old asphalt; introducing a quantity of fresh aggregate into the hot gas stream at said location and heating the fresh aggregate to the first temperature by cascading the same across the hot gas stream while moving the fresh aggregate in said direction; employing a portion of the heat of the hot gas stream to separately heat a quantity of aged mix while moving the same in said direction but apart from the heated fresh aggregate to a second temperature less than the destructive temperature of the old asphalt but sufficient to at least begin restoration of its plasticity; combining and mixing the two heated quantities of the fresh aggregate and the aged mix by introducing the heated aged mix into the stream of hot gases and the heated fresh aggregate at a location downstream of said upstream location to produce a heated quantity of combined mix having a third temperature less than the destructive temperature of the old asphalt; and cascading the combined mix across the hot gas stream while continuing to move the same in said direction and adding a quantity of fresh asphalt thereto to produce a recycled mix, the recycled mix being heated by the hot gas stream to a fourth temperature greater than the third temperature but less than the destructive temperature of the old and the new asphalt.

4,318,620
APPARATUS FOR PRODUCING BITUMINOUS COATED PRODUCTS FROM AGGREGATES, BITUMEN AND SOLID MATERIALS LIKELY TO DETERIORATE AT HIGH TEMPERATURE

Louis Malipier, Saint Chamond, and Guy Marconnet, St. Martin La Plaine, both of France, assignors to Creusot-Loire, Paris, France

Filed Dec. 17, 1980, Ser. No. 217,493

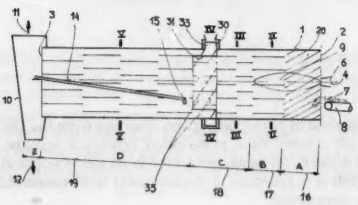
Claims priority, application France, Jan. 11, 1980, 80 00570

Int. Cl.[3] **B28C** *5/20*

U.S. Cl. 366—25 **4 Claims**

1. In apparatus for producing bituminous coated products from aggregates, bitumen and solid materials subject to deterioration or exposure to a high-temperature environment, comprising a drum rotatable about its axis, slightly inclined from the horizontal in a downward direction from its inlet end to its outlet end, inside which drum flow, in the same direction, solid products and hot gases entering from a burner by way of said inlet end of said drum through which fresh aggregates also enter, brought by a supply means into a first zone of said drum downstream of said inlet end, said drum being applied with solid materials such as recycled coated products at an intermediate zone disposed between said inlet end and said outlet end through which the products flowing in the drum are removed, and proceeding, in the direction of flow of said products, to a hot mixing zone into which said bitumen is introduced and in which said products are raised over the whole section of the drum by lifting devices and brought into contact with the hot gases passing through said drum, the improvement comprising

(a) a zone for the transfer of fresh aggregates located between said first zone and said intermediate zone of said drum, said transfer zone comprising a plurality of shield-paddles attached to said inner wall of said drum and each having a hollow surface directed towards said inner wall;



(b) said intermediate zone comprising, in the direction of flow of said products,

(i) a first part in which the inner wall of said drum has lifting paddles thereon for forming a continuous curtain of solid products falling over the whole section of said drum; and

(ii) a second part at which said drum, surrounded by a fixed means for introducing solid materials and having openings passing through its outer casing, has an inner casing coaxial with said outer casing, smaller in diameter and equipped on its inner surface with lifting means for forming a continuous curtain of solid products falling over the whole section of said inner casing, helical blades being disposed between the inner wall of said drum and the outer wall of said second casing to drive the solid materials introduced at this point in said drum towards said hot mixing zone.

4,318,621
TRANSIT CONCRETE MIXER WITH DISPLACEABLE CHARGING HOPPER

William A. Lawrence, and John A. O'Dea, both of Columbus, Ohio, assignors to Jaeger Machine Company, Columbus, Ohio

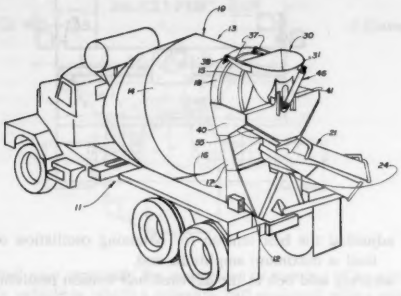
Filed May 9, 1977, Ser. No. 794,750

Int. Cl.[3] **B28C** *5/42*

U.S. Cl. 366—41 **3 Claims**

2. In a transit concrete mixer, the combination of: a mixing drum supported for rotation about a longitudinal axis and including a rear end portion provided with an opening for charging and discharge of the drum with said opening disposed transverse to the longitudinal drum axis, a support disposed adjacent the rear end portion of said drum, a charging hopper mounted on said support and having an upper receiving end and a lower discharge conduit projecting downwardly and forwardly with respect to said drum to normally extend through the charging and discharge opening and project a distance interiorly of said drum, said hopper mounted on said support by means permitting selective displacement of said hopper between the normal position with the discharge conduit projecting into said drum and a displaced position where the discharge conduit is withdrawn from said drum, a dis-

charge chute assembly disposed adjacent the rear end portion of said drum to receive concrete discharged from the drum through said opening, said discharge chute assembly having a pair of downwardly convergent walls terminating in an open bottom forming an opening facing forward to receive concrete



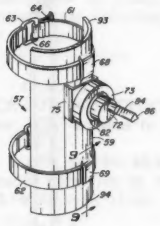
therethrough from the drum and a rearwardly facing opening, and a discharge stop plate mounted on said support for displacing movement between a position closing the rearwardly facing opening of said discharge chute assembly and a position displaced relative thereto.

4,318,622

APPARATUS AND METHOD FOR UTILIZING HAND-HELD POWER TOOL FOR SHAKING PAINT CONTAINERS AND THE LIKE

John W. Sterrenberg, 8350 E. McKellips Rd., #146, Scottsdale, Ariz. 85257

Filed Jul. 31, 1980, Ser. No. 174,172
Int. Cl.³ B01F *11/00*
U.S. Cl. 366—110 **6 Claims**



1. An apparatus utilized in conjunction with a hand-held power drill for shaking a container of spray paint, the hand-held power drill including a rotatable chuck, said apparatus comprising in combination:

a. a semicylindrical cradle for receiving the container of spray paint, said cradle having a longitudinal axis extending between first and second ends thereof, said semicylindrical cradle being adapted to be held loosely in a hand of a user during operation of the hand-held power drill;

b. securing means for removably securing the container of spray paint within said semicylindrical cradle;

c. a bearing secured to said semicylindrical cradle;

d. a first cylindrical driveshaft rotatably mounted within said bearing for movement about a first axis of rotation, said first axis of rotation extending substantially perpendicular to the longitudinal axis of said semicylindrical cradle, said first cylindrical driveshaft having a front face substantially perpendicular to said first axis of rotation at an end of said first cylindrical driveshaft furthest from said semicylindrical cradle;

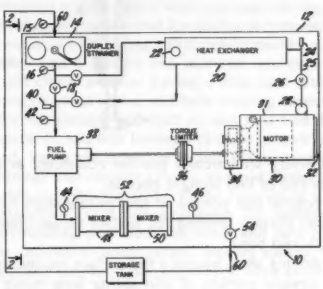
e. a second generally cylindrical driveshaft having a length substantially commensurate with the length of the rotatable chuck of the hand-held power drill, said second generally cylindrical driveshaft having a diameter smaller than the diameter of said first cylindrical driveshaft and having a first end secured to said front face of said first cylindrical driveshaft and having a second end for being engaged by the rotatable chuck of the hand-held power drill, said second generally cylindrical driveshaft having a second axis of rotation extending substantially perpendicular to said front face of said first cylindrical driveshaft and substantially parallel to said first axis of rotation, said second axis of rotation being offset from said first axis of rotation for allowing a user to vibrate said semicylindrical cradle and the container of spray paint secured thereto by operating the hand-held power drill to rotate said second generally cylindrical driveshaft while holding said semicylindrical cradle loosely in one of the user's hands.

4,318,623

ALTERNATE LIQUID FUEL PROCESSING APPARATUS

William S. Curtis, Hayward, Calif., assignor to Alternate Liquid Fuels Corp., Oakland, Calif.

Filed Nov. 20, 1979, Ser. No. 96,012
Int. Cl.³ B01F *15/06*
U.S. Cl. 366—144 **5 Claims**



1. Apparatus for use in connection with a fuel storage tank for processing fuel components contained in said tank to develop a homogeneous and stable alternate liquid fuel comprising a fuel filter, a pump driven by a power source, a fuel heater and a STATIC MIXER which are arranged in series for fluid transmission between an outlet of said tank and an inlet of said storage tank, wherein said power source is an internal combustion engine having an exhaust, and wherein said heater comprises a heat exchanger to which heat is provided by said exhaust of said engine.

4,318,624

SLIP CLUTCH FOR A BIN LEVEL INDICATOR

Richard G. Jett, 5N634 Hanson Rd., Saint Charles, Ill. 60174

Filed Aug. 25, 1980, Ser. No. 180,631
Int. Cl.³ B01F *13/04, 15/02*
U.S. Cl. 366—349 **12 Claims**

1. In a level indicator for indicating the level of granular material or the like in a bin or other container,

rotatable paddle means for engagement by the rising material to impede the rotation of said paddle means,

a rotatable paddle shaft for causing rotation of said paddle means,

an electric motor,

a rotatable driving shaft,

a drive train connected between said electric motor and said driving shaft for causing rotation of said driving shaft,

and control means operable by a predetermined increase in the torque developed by said motor due to engagement of said paddle means by the rising material,

the improvement comprising a slip clutch forming a slippage driving connection between said driving shaft and said paddle shaft,

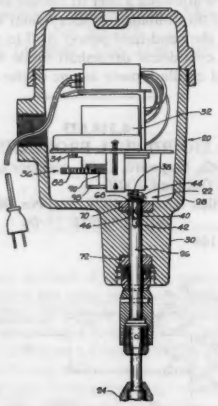
said slip clutch including a hollow driven end portion of said paddle shaft,

said hollow driven end portion having an axial bore therein,

said driving shaft being rotatably received in said bore,

said slip clutch including a generally D-shaped open spring loop mounted around said hollow end portion of said paddle shaft,

said spring loop having a substantially straight portion and a



generally semicircular portion connected at one end to one end of said straight portion,

said hollow end portion of said paddle shaft having a cut-away portion forming flat surface means communicating with said bore,

said driving shaft having a flat surface on one side thereof,

said straight portion of said spring loop being initially in engagement with said flat surface of said driving shaft and said flat surface means of said paddle shaft to transmit torque between said driving shaft and said paddle shaft,

said straight portion of said spring loop being flexible outwardly by said flat surface on said driving shaft to provide for slipping between said driving shaft and said paddle shaft when the rotation of said paddle means is stopped by the rising material.

4,318,625

STEPPER MOTOR LOAD TUNING

Thomas G. Survant, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,593

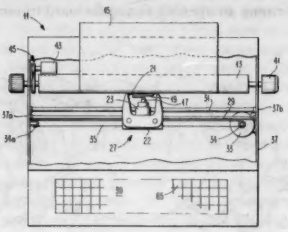
Int. Cl.³ B41J *19/30;* **G05B** *19/40*

U.S. Cl. 400—322 **14 Claims**

1. A method for adjusting the natural frequency of a stepper motor driving a load through a belt and pulley arrangement, said method including:

generating electrical signals for driving said stepper motor back and forth about a position, at a predetermined rate;

feeding said stepper motor with said electrical signals;



adjusting the belt tension for obtaining oscillation of said load at maximum amplitude; and,

securing said belt at the adjusted belt tension position.

4,318,626

PEN WITH AN IMPROVED INK INJECTION SYSTEM

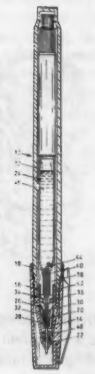
Edward Bok, Burgemeester Amersfoordt Laan 82, Badhoevedorp N.H., Netherlands

Filed Jan. 9, 1979, Ser. No. 2,095

Claims priority, application Netherlands, Nov. 15, 1979, 7.711.065

Int. Cl.³ B43K *5/10*

U.S. Cl. 401—151 **14 Claims**



1. A pen comprising:

a first ink reservoir,

a second ink reservoir beneath said first ink reservoir, containing capillary ink buffer channels in capillary communication with each other,

an ink injection tube, extending downward from said first ink reservoir to said second ink reservoir, a pen tip is capillary communication with said ink buffer channels,

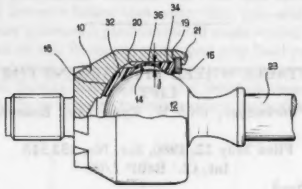
venting means, extending upward from a position near the bottom of said second ink reservoir to the outer atmosphere, and

an ink control means in between said ink injection tube and said ink buffer channels.

4,318,627
BALL AND SOCKET ARTICULATED JOINT

Gérard Morin, Libiaire, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed May 15, 1980, Ser. No. 150,259
Claims priority, application France, May 15, 1979, 79 12295
Int. Cl.³ F16C *11/06*
U.S. Cl. 403—133 2 Claims

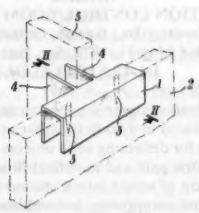


1. Ball joint especially for suspension or steering of an automobile vehicle in which a spherical ball equipped with a stem is assembled to pivot in a housing by means of a bearing member made from plastic material, said bearing member including an annular flange which is supported on a closing element of said housing in such a manner as to support one of the two hemispheres of the said spherical ball separated by an equatorial plane perpendicular to the axis of said stem said bearing member having a part provided with a first series of slots extending along the meridians defined by said spherical ball in such a manner as to subdivide the said part into segments in the form of petals arranged between the other of the said two hemispheres and said housing, characterized in that the said petals are tapered in the form of wedges and are connected to said annular flange by connection elements integral with said annular flange and said petals, said connection elements presenting a reduced lateral cross section which is proportioned in length to permit the bending or buckling thereof in the space defined between the spherical ball and the internal wall of the housing on assembly of the articulated joint so that said connection elements elastically load the petals in the form of wedges with a view to ensuring the preloading of the joint and the automatic taking up of the play.

4,318,628
CONNECTING DEVICE FOR CONSTRUCTION PANELS

Paolo E. Mancini, Rome, Italy, assignor to International W Systems S.r.l., Italy

Filed Oct. 1, 1979, Ser. No. 80,905
Claims priority, application Italy, Oct. 16, 1978, 51526 A/78
Int. Cl.³ F16B *9/00, 15/00*
U.S. Cl. 403—231 2 Claims

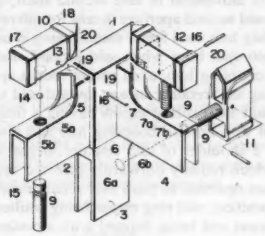


1. A connecting joint seat member device comprising a base wall; at least one pair of side walls, the side walls of any pair extending perpendicularly from said base wall and parallel with each other in side-by-side relationship; said base wall and each pair of said side walls defining a channel adapted to receive a construction panel member; and at least two conical locking projections, each locking projection formed integrally with said base wall, extending parallel with a pair of said side walls and within the channel defined by said last-named pair of side walls and adapted to penetrate and hold a construction panel member received in that channel.

4,318,629
COUPLING APPARATUSES

Heihachiro Yamamoto, 6-43-10, Nogata Nakano, Tokyo, Japan

Filed Feb. 15, 1980, Ser. No. 121,809
Int. Cl.³ F16B *7/00, 12/36, 13/00*
U.S. Cl. 403—297 6 Claims

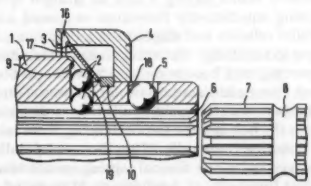


1. An apparatus for coupling tubular frame members comprising a coupling block, a plurality of couplings extended from said coupling block, each of said couplings having a guide recess, a clamp member mounted for sliding movement within each guide recess, a bolt having a first end connected with said clamp member and a second end screwed into one of said couplings, said clamp member having a hole, said first end of said bolt being received within said hole, bearing means within said hole for supporting said bolt at said first end for free turning movement, said bolt having a circular groove adjacent said first end, and a pin mounted to said clamp member and extended through said circular groove, and said clamp member being operable to slide responsive to the rotation of said bolt within a respective guide recess to press the tubular frame member surrounding said clamp member and said coupling defining the respective guide recess thereby solidly holding said coupling and tubular frame member to each other.

4,318,630
LOCKING DEVICE FOR A SHAFT COUPLING MECHANISM

Paul Herchenbach, Ruppichteroth, Fed. Rep. of Germany, and Manfred Struck, Quevedo, Ecuador, assignors to Jean Walterscheid GmbH, Rheinland, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,597
Claims priority, application Fed. Rep. of Germany, May 12, 1979, 2919214
Int. Cl.³ B25G *3/18;* F16B *21/00;* F16D *1/00*
U.S. Cl. 403—322 11 Claims



1. A locking device for coupling a first and a second shaft comprising: a coupling hub affixed to said first shaft and having an inner surface defining a bore into which said second shaft is received for coupling engagement; first aperture means in said

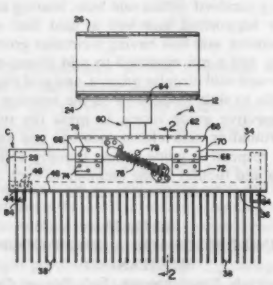
coupling hub; lock means operatively received in said first aperture means for movement radially between a first locking position and a second unlocking position; recess means in said second shaft adapted to have said lock means received therein for effecting locking engagement between said first and said second shafts; retainer means movable between a first position where said retainer means operate to retain said lock means in said first locking position and a second position releasing said lock means and enabling movement thereof to said second unlocking position; second aperture means in said coupling hub axially spaced from said first aperture means in a direction forwardly of said first aperture means taken in the mounting direction of movement of said second shaft; feeler means arranged in said second aperture means for movement radially of said coupling hub, said feeler means being arranged to project radially into said bore when said second shaft is uncoupled from said coupling hub; axial spring means applying a spring force urging said retainer means toward said second releasing position, said axial spring means having a first end supported by an axial stop on said coupling hub and a second end supported by a shoulder of said retainer means; and ring means through which radially outwardly directed movement of said feeler means operates to push said retainer means to said first retaining position, said ring means being resiliently held at said retainer means and being formed with a conical surface.

4,318,631

TEXTURING BROOM APPARATUS FOR ROADWAY PAVEMENTS

Richard R. Vickers, 2012½ E. 7th St., Anderson, Ind. 46012

Filed Jan. 21, 1980, Ser. No. 113,771
Int. Cl.³ E01C *23/16*
U.S. Cl. 404—93 **15 Claims**



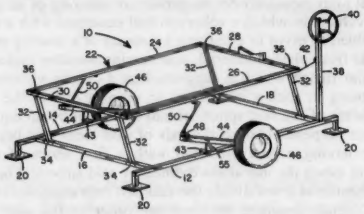
8. In apparatus for forming shallow texturing grooves in the surface of freshly laid uncured concrete pavement confined within side form members, said apparatus including a horizontally extending endless conveyor belt movable to carry a texturing broom mounted thereon across the pavement surface to be textured to form the said grooves therein, said broom includng a header board having a row of straight spring steel tines projecting equidistantly therefrom in spaced apart side-by-side parallel relation and disposed in a common plane, the improvement comprising: mounting means including hinge means supporting said broom on said belt for pivotal movement thereon about a horizontal axis normal to the direction of travel of the belt with the said row of tines disposed transversely across the belt and the tines extending from said header board in a direction outwardly of the belt and parallel to the longitudinal vertical plane thereof; spring means biasing said pivoted broom forwardly of the direction of travel of said belt; and adjustment means on said mounting means engageable with said broom to set it in a predetermined limiting pivoted idle position on said belt with the said tines extending in a direction generally perpendicularly outward of said belt; said mounting means supporting said broom in a predetermined position on said belt relative to the surface of said pavement to engage with and be pivoted rearwardly upward, by the one of said form members at the leading end of the pavement to be traversed by the broom during its travel along the lower horizontal run of said belt, from its said pivoted idle position to an operative working position with the said tines trailing and disposed at a shallow working angle relative to the pavement surface for spring pressed engagement of the free ends of the said tines with the pavement surface to form the said grooves therein.

4,318,632

RETRACTABLE WHEEL ATTACHMENT FOR BOAT LIFT

George W. Fortmeyer, 1905 W. Ryan Ave., Roseville, Minn. 55113

Filed May 22, 1980, Ser. No. 152,515
Int. Cl.³ B60P *1/00*
U.S. Cl. 405—3 **7 Claims**



1. In boat lift apparatus of the type having a generally horizontal stationary frame having spaced apart side members adapted to rest on a lake bottom or ground and a boat supporting means coupled to said stationary frame and adapted to be raised and lowered relative to said stationary frame by a winch mechanism, means for facilitating the movement of said boat lift apparatus on said lake bottom or ground comprising:

(a) a pair of elongated arms pivotally connected at predetermined points along the length thereof to said spaced apart side members of said stationary frame of said boat lift;

(b) wheel means journaled for rotation about an axis perpendicular to the longitudinal axis of said spaced apart side members at a point proximate a first end of said arms; and

(c) means coupling the second ends of said arms to said boat supporting means of said boat lift, the arrangement being such that when said boat supporting means is raised relative to said stationary frame by said winch, said wheel means are positioned between said stationary frame and said lake bottom or ground.

4,318,633

CONTAMINATION CONTROL BOOM ARRANGEMENT

Gee Tsang, 3 Coventry Dr., Guelph, Ontario, Canada

Filed May 31, 1979, Ser. No. 44,240
Int. Cl.³ E02B *15/04*
U.S. Cl. 405—63 **10 Claims**

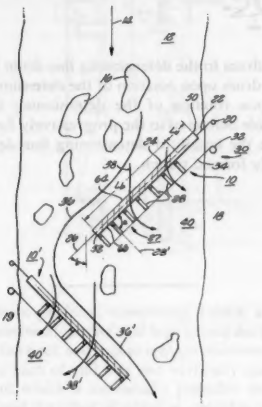
1. A contamination control boom arrangement of the type adapted to be placed in a body of water moving in a predetermined direction for deflecting solid objects floating in the body of water into a first path and to deflect floating liquid contaminants in the body of water into a second path different from said first path and comprising, in combination:

a rigid flotation means having an elongated longitudinal axis between a first end and a second end thereof, a top surface, a bottom surface, a water line intermediate said top surface and said bottom surface, a freeboard portion extending a first predetermined distance above said water line to said top surface, a keel portion extending a second predetermined distance below said water line to said bottom surface, an upstream surface facing into said predeter-

mined direction of movement of said body of water and a downstream surface facing away from said predetermined direction of movement of said body of water;

said flotation means having first walls defining fluid passageway means extending therethrough from said upstream surface to said downstream surface, and said fluid passageway means extending a third preselected distance less than said first preselected distance above said water line and a fourth preselected distance less than said second preselected distance below said water line, and said fluid passageway means at a predetermined angle to said longitudinal axis of said flotation means, and said fluid passageway means having a predetermined cross-sectional area;

fin means having a fin axis on said flotation means and extending from said downstream surface thereof, and said fin



means having an upper surface, a lower surface, an outer end portion spaced from said flotation means and extending a fifth preselected distance below said water line, and an inner end portion;

fin mounting means for mounting said inner end portion of said fin means to said flotation means;

flotation mounting means for mounting said first end of said flotation means at a predetermined location relative to said body of water,

whereby comparatively large, solid floating objects in said body of water are deflected by said flotation means into said first path around said second end of said flotation means and liquid contaminants floating in said body of water flow through said fluid passageway means in said second path into regions adjacent said downstream surface of said flotation means.

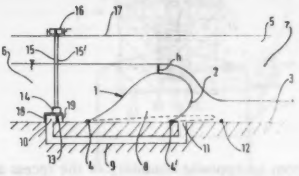
4,318,634

NON-VIBRATING COLLAPSIBLE DAM

Bruno Borca, Milan, Italy, assignor to PIRELLI/FURLANIS Applicasioni Idrauliche-agricole, Italy

Filed Apr. 21, 1980, Ser. No. 142,375
Claims priority, application Italy, May 10, 1979, 22510 A/79
Int. Cl.³ E02B 7/02
U.S. Cl. 405—115 **4 Claims**

1. A collapsible dam installed across a watercourse having a bottom and side banks, said dam comprising a flexible, elongated water obstructing member having spaced longitudinally extending edges and laterally spaced ends disposed across the watercourse and anchored at each end to said side banks, first and second means anchoring both of said longitudinally extending edges to the bottom of the watercourse with the second means spaced downstream from the first means, said water obstructing member being buoyed upwardly towards the surface of the water between the said anchoring means to obstruct flow of water in the watercourse, and a water by-pass means for flow of water around the said water obstructing member for regulating the depth of water flowing over the water obstructing member to reduce vibration of the said obstructing member, said water by-pass means comprising a conduit having a water intake disposed upstream of the water obstructing



member and a water outlet disposed downstream of the water obstructing member where water flowing from the outlet will flow upwardly against the water obstructing member while it is buoyed upwardly from the bottom of the watercourse, and means for regulating water flow in the conduit.

4,318,635

CULVERT STRUCTURE HAVING CORRUGATED RIBBING SUPPORT

Mark A. Gurtner, Pulaski, and Charles D. Gorman, Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jul. 7, 1980, Ser. No. 166,420
Int. Cl.³ E01F 5/00
U.S. Cl. 405—126 **11 Claims**

1. In a flexible culvert structure formed of a plurality of arch-shaped corrugated structural sheets secured to each other in a manner to form a low profile box culvert, where said sheets are characterized by a valley-to-valley dimension "X" and a crest height "Y", the improvement comprising in combination therewith, the provision of a plurality of spaced apart transverse reinforcing ribs in the form of corrugated metallic sheets consisting of a simple crest with two adjacent valleys secured to said arch-shaped corrugated structural metallic sheets at intervals along the length of said culvert structure, where individual transverse reinforcing ribs are characterized by a valley-to-valley dimension "X" and a crest height greater than "Y", and are secured to either the interior or exterior of said culvert structure.

4,318,636

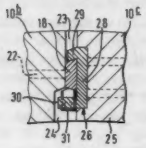
TUNNEL LINING, SEGMENT THEREFORE AND METHOD OF LINING A TUNNEL

Norman S. Thomas, Market Drayton, England, assignor to Sheridan Contractors (Engineering) Limited, Birmingham, England

Filed Apr. 12, 1979, Ser. No. 29,473
Claims priority, application United Kingdom, Apr. 12, 1978, 14294/78; Jun. 9, 1978, 26631/78
Int. Cl.³ E21D 11/00
U.S. Cl. 405—153 **10 Claims**

1. A segment for a tunnel lining, the segment having a projection and a recess to receive the projection from another identical segment when the two segments are assembled together, wherein the segment defines an open mouth of the

recess, the segment has a surface which extends from said mouth to define one boundary of the recess, the segment has a clamping element which is movable into the recess towards



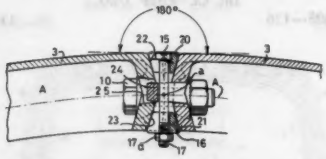
said surface from an opposite boundary of the recess and said surface and the clamping element are undercut to define between them an adjustable gap which diverges in a direction away from the mouth of the recess.

4,318,637

PROCESS AND DEVICE FOR THE ASSEMBLY OF VOUSSOIRS FOR TUNNEL LININGS

Jacques F. Oger, Pont-A-Mousson, and Jean-Claude Hauer, Saulxures les Nancy, both of France, assignors to Pont-A-Mousson S.A., Nancy, France

Filed Jan. 15, 1980, Ser. No. 112,255
Claims priority, application France, Jan. 15, 1979, 79 00884
Int. Cl.³ E21D *11/22*
U.S. Cl. 405—153 **5 Claims**



1. A method of assembling at least two adjacent tunnel or well lining voussoirs, each having the general shape of a segment of a cylinder with a radius R, each comprising at least a cylindrical cover, two flat transverse walls and two longitudinal sides each having a radial profile which is convex relative to that of the adjacent voussoir, wherein linings corresponding to a radius which is equal to, lesser or greater than R may be obtained, comprising: adjustably placing the curved adjacent sides of two voussoirs in abutment in rolling contact along a contact line parallel to the axis of the cylinder defining the voussoirs by selectively locating this contact line such that the planes tangential to the respective external faces of the abutting sides of the voussoirs assume an angular position of an angle equal to, greater or less than 180°, in dependence on whether the radius of the lining should be equal to, less or greater than R, and then rigidly locking the two voussoirs relative to each other in the angular position selected.

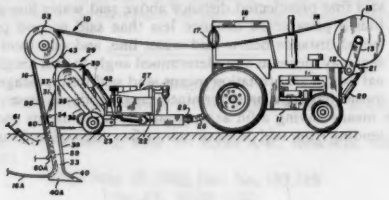
4,318,638

CABLE DETENSIONING APPARATUS

Jon M. Promersberger, and Richard W. Steinberg, both of Mankato, Minn., assignors to Vibra-King, Inc., Mankato, Minn.

Filed Jan. 23, 1980, Ser. No. 114,621
Int. Cl.³ F16L *1/02, 3/22*
U.S. Cl. 405—177 **25 Claims**

1. An apparatus to lay and bury a cable in a relaxed state in a progressively formed trench in the ground, comprising: a frame movable over the ground; a plowshare mounted on the frame in position to progressively form a trench in the ground as the frame is moved over the ground; a capstan drum rotatably mounted on the frame adapted to receive at least one wrap of cable from a cable supply source and direct it to the progressively formed trench for burial therein; a detensioning line drum rotatably mounted on the frame adapted to carry a supply of detensioning line and rotatable to deliver detensioning line to the progressively formed trench; and means connecting



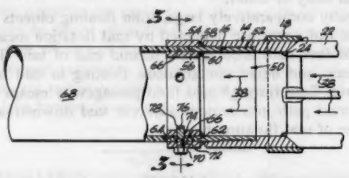
the capstan drum to the detensioning line drum for rotation of the capstan drum upon rotation of the detensioning line drum whereby upon rotation of the detensioning line drum the length of cable delivered to the progressively formed trench is greater than the length of detensioning line delivered to the progressively formed trench.

4,318,639

CONNECTOR FITTING FOR USE IN INSTALLING UNDERGROUND PLASTIC PIPES

William O. Schosek, 7942 Marx Dr., North Fort Myers, Fla. 33903

Filed May 12, 1980, Ser. No. 149,173
Int. Cl.³ F16L *1/02*
U.S. Cl. 405—184 **5 Claims**

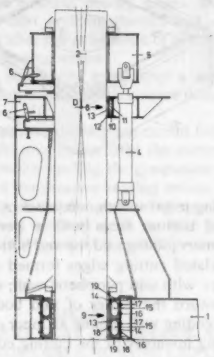


1. A fitting for connecting a length of plastic pipe to a distal end of a coupled underground hole forming rod assembly when the rod assembly is positioned underground with the distal end positioned in a target trench, the fitting comprising a main metal sleeve portion of a predetermined length, thickness and diameter, a pair of axially aligned relatively short metal sleeves of predetermined differing diameters for fixed attachment, as by welding, relative to respective inner and outer rear end surface portions of said main sleeve portion, said pair including rearwardly extended portions defining a rearwardly opening annular pocket, sized to receive a leading end portion of the length of plastic pipe; lock bolt means, threadedly engaged through said extended portions in positions to engage through said plastic pipe leading end within said pocket, and means to connect a forward end of said main sleeve portion to the distal end of the rod assembly.

4,318,640
LIFTING ISLAND

Peter Schiemichen, Hünxe, and Werner Zimmermann, Langenfeld, both of Fed. Rep. of Germany, assignors to Deutsche Babcock Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Sep. 12, 1979, Ser. No. 75,178
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842499
Int. Cl.³ E02B *17/02*
U.S. Cl. 405—199 9 Claims



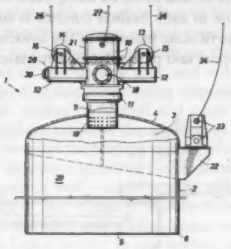
1. An off-shore platform, comprising a deck; a plurality of upright legs; means mounting said legs in said deck for relative movement of the deck and legs in upright direction, said means comprising for each of said legs two vertically spaced support bearings one of which is universally yieldable about a center point thereof and the other of which is yieldable only in radial direction; and means for varying the ability of said other bearing to yield in radial direction between a maximum and a minimum value; said bearings providing continuous guidance of the legs during relative motion between them and the deck; said other bearing serving to center the respective leg and comprising a plurality of fluid-operated cylinder-and-piston units mounted on said deck angularly spaced about the respective leg and each having a piston rod extending radially of the leg, and a plurality of bearing members each carried by one of said piston rod and together encircling the respective leg.

4,318,641
METHOD FOR SECURING A TUBULAR ELEMENT TO THE BOTTOM OF A BODY OF WATER AND APPARATUS FOR CARRYING OUT THIS METHOD

Johannes R. Hogervorst, Rijswijk, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 30, 1979, Ser. No. 99,240
Claims priority, application United Kingdom, Dec. 4, 1978, 47094/78
Int. Cl.³ E02D *7/00, 29/00*
U.S. Cl. 405—224 5 Claims

1. A method of securing a tubular element in the bottom of a body of water, comprising the steps of lowering the tubular element from the watersurface to the waterbottom and allowing said tubular element to fill completely with water, selectively removably mounting a pumping unit on the tubular element either before or after the lowering of the tubular element through the water to an underwater position of the pumping unit and tubular element on the bottom, closing the tubular element at the upper end, pumping water from said tubular element to reduce the pressure within the tubular element by operating the pumping unit so that the pressure difference of the water outside and within the tubular element causes the tubular element to penetrate into the waterbottom substantially completely, stopping the operation of the pumping unit, disconnecting the pumping unit from the tubular

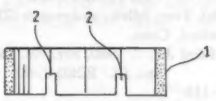


element, raising the pumping unit to the watersurface and recovering it.

4,318,642
WALLS

Clifford R. Barnett, Auckland, New Zealand, assignor to Bells & Mills Limited, Auckland, New Zealand

Continuation of Ser. No. 939,200, Sep. 5, 1978, abandoned. This application Jul. 14, 1980, Ser. No. 168,725
Claims priority, application New Zealand, Sep. 5, 1977, 185102
Int. Cl.³ E02B *3/12*
U.S. Cl. 405—284 13 Claims



1. A method of making a retaining wall using a series of rings in the form of short tubes formed to provide filling retaining means said method comprising the steps of stacking said rings in a single row along the length of the retaining wall, so that the wall has a thickness equal to the diameter of said rings, interlinking said rings one with the other during stacking so that a wall is constructed capable of resisting overturning forces applied normally to the height of the wall, arranging said rings during stacking so that adjacent rings in each row are closely adjacent to or touch each other and rings in adjacent rows are stretcher bonded so that the rings and the filling retaining means coact to retain loose filling placed within the erected rings at least when the surface of the filling exposed to view in the completed wall has attained its natural angle of repose.

4,318,643
APPARATUS FOR CONVEYING WASTE MATERIALS BY SUCTION

Bertil S. W. Larsson; Stefan J. A. Bokfors, and Karl G. Olsson, all of Stockholm, Sweden, assignors to AB Svenska Flaktfabriken, Nacka, Sweden

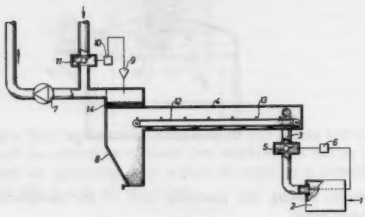
Filed Dec. 28, 1979, Ser. No. 108,035
Int. Cl.³ B65G *53/66*
U.S. Cl. 406—14 12 Claims

1. Apparatus for conveying particulate waste materials from a plurality of remote points to a central collecting point comprising:

(a) a common manifold,

(b) a plurality of branch conduits, each branch conduit extending from one of said remote points to said common manifold;

(c) suction-producing means for establishing airflows from said remote points into said manifold, the relative dimensions of said manifold and of said branch conduits and the magnitude of said airflows being such that the velocity of the airflow in each branch conduit is sufficiently high to entrain particulate material at the associated remote point and transport said particulate waste materials through said



branch conduit, while the velocity of said airflow in said manifold is sufficiently low so that at least a substantial portion of said particulate waste is precipitated in said manifold; and

(d) conveying means for transporting said precipitated waste materials from said manifold to said central collecting point.

4,318,644

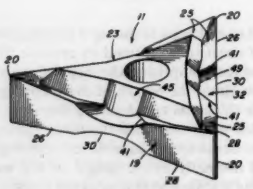
CUTTING INSERT

Heinz H. Seidel, Troy, Mich., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jul. 7, 1980, Ser. No. 166,724

Int. Cl.³ B26D *1/00*

U.S. Cl. 407—114 **1 Claim**



1. A cutting insert comprising a polygonal body having substantially parallel surfaces and peripheral side surfaces substantially normal to said parallel surfaces joining to form corners of said polygon, at least one of said parallel surfaces having grooved recesses merging at and descending from respective corners of said polygon adjacent respective peripheral side surfaces, inner land portions extending downwardly and outwardly from a respective parallel surface toward a respective side surface, each inner land portion comprising a pair of end face portions joining an intermediate face portion, each of said grooved recesses including a respective end face and adjoining outer land portion, said adjoining outer land portion extending inwardly and downwardly at an acute angle from a side surface to form a cutting edge therewith, each side surface having associated therewith a pair of adjoining outer land portions and an intermediate land portion, said intermediate land portion being arcuate and extending inwardly from a respective side surface to said intermediate face portion at an angle of ninety degrees or greater to said respective side surface, said pair of adjoining outer lands merging with said intermediate land for terminating respective grooves.

4,318,645

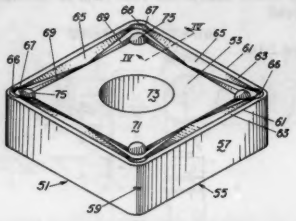
CUTTING INSERT

James F. McCreery, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Sep. 2, 1980, Ser. No. 183,028

Int. Cl.³ B26D *1/00*

U.S. Cl. 407—114 **12 Claims**



1. A cutting insert which comprises: a polygonal body having top and bottom faces with a peripheral wall having rounded corners joining said top and bottom faces; at least two angularly related cutting edges formed at the juncture of at least one face with said peripheral wall; a land area extending inwardly toward the center of said body from said cutting edge; a descending wall joining an inner edge of said land area and extending inwardly of the cutting edge of said polygonal body; a secondary land area in the area of said corner joining an inward edge of said descending wall and extending inwardly toward the center of the polygonal body; said secondary land having a width which is at a maximum in the corner and which decreases as the secondary land extends away from said corner; a secondary descending wall joining and extending inwardly from said secondary land; a planar face joining said secondary descending wall and extending inwardly toward the center of said body; said secondary land located at a secondary height above the planar face; said secondary height being a maximum in the corner area and diminishing as the secondary land extends away from said corner; and a bump located in the corner area and rising above said secondary land.

4,318,646

TAPPING MACHINE

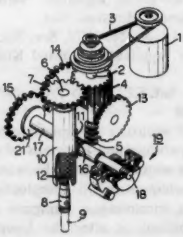
Yasuhiko Watanabe, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 2, 1980, Ser. No. 136,715

Claims priority, application Japan, Apr. 16, 1979, 54-50242[U]

Int. Cl.³ B23B *47/24*

U.S. Cl. 408—6 **9 Claims**



1. A tapping machine comprising:

a frame;

a quill reciprocatively mounted on said frame;

a spindle rotatably mounted in, and reciprocated with, said quill, carrying a screw tap at one end thereof;

driving means including a reversible electric motor and operatively connected to said quill so as to move said quill in advance and retractive direction, and operatively connected to said spindle so as to rotate said spindle in forward and backward direction;

position sensing means for generating a sensing signal when said quill has arrived at a predetermined position in advance-movement thereof;

a driving circuit connected to said driving means for performing a working cycle, in which said quill advances and said spindle forwardly rotates before the generation of the sensing signal from said position sensing means, and then said quill retracts to a start position thereof and said spindle backwardly rotates after the generation of the sensing signal from said position sensing means;

temperature sensing means for generating a sensing signal while the temperature of said motor is more than a predetermined value; and

control means connected to said driving circuit for continuing operation of said driving means until the current working cycle is finished notwithstanding the generation of the sensing signal from said temperature sensing means in advance-movement of said quill, and for preventing operation of said driving means for next working cycle until the generation of the sensing signal from said temperature sensing means is ceased.

4,318,647

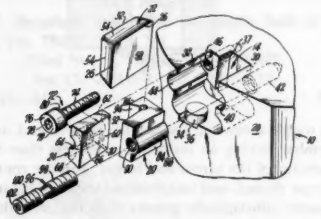
ADJUSTABLE INSERT SEAT AND WEDGE ASSEMBLY FOR AN INDEXABLE BORING CUTTER

Donald S. Erkfritz, Clarkston, Mich., assignor to General Electric Company, Columbus, Ohio

Filed Apr. 7, 1980, Ser. No. 138,197

Int. Cl.[3] B23B *51/00*; B26D *1/12*

U.S. Cl. 408—153 **9 Claims**



1. An adjustable insert seat and wedge assembly for an indexable cutting tool, said cutting tool being generally circular and adapted to be rotated about its central axis, said cutting tool having at least one pocket disposed at an opening of the periphery thereof, said pocket having opposed parallel leading and trailing walls, said pocket further including a bottom wall disposed perpendicular to said leading and trailing walls, and wherein said insert seat and wedge assembly comprises:

a wedge means having leading and trailing planar surfaces, with said leading surface being disposed at an angle relative to said trailing surface, and with said trailing surface of said wedge means being disposed in abutting relationship with said trailing wall of said pocket of the cutting tool;

first screw means engaged with said wedge means and said cutting tool such that when said screw means is rotated, the radial location of said wedge means relative to the central axis of said cutting tool is varied;

an indexable insert having front and rear planar surfaces and a plurality of edge faces disposed therebetween;

an insert seat having opposed leading and trailing surfaces, with the leading surface of said insert seat being disposed in abutting relationship with the leading wall of said pocket, and with the trailing surface of said insert seat having an undercut portion such that said insert seat is generally L-shaped in configuration, said undercut defining planar leading and rear locating supports, and wherein said insert is receivable in said insert seat with the front surface of said insert abutting the leading locating support of said insert seat, with one edge face of said insert abutting the rear locating support of said insert seat and with another edge face of said insert abutting the bottom wall of said pocket of said cutting tool, and with the leading locating support of said insert being disposed at an angle relative to the leading surface of said insert seat with the angular disposition between the leading locating support of said insert seat and the leading surface of said insert seat equaling the angular disposition between the leading and trailing surfaces of said wedge means, and wherein the leading surface of said wedge means abuts the rear surface of said insert, and with said trailing planar surface of said wedge means being parallel to said leading surface of said insert seat, and with said leading planar surface of said wedge means being parallel to said leading locating support of said insert seat, thereby enabling the locking of said insert in place; and

second screw means threadably engaged with said insert seat and said cutting tool such that when said second screw means is rotated the radial location of said insert seat relative to the central axis of said cutting tool is varied, whereby the radial position of said insert seat may be varied by adjusting said first and second screw means.

4,318,648

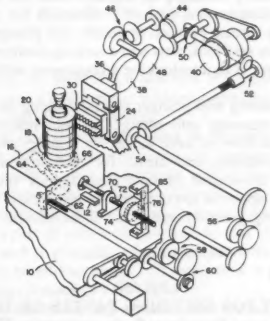
GEAR GENERATING MACHINE

Thomas A. Deprez, Rochester, and Philip F. White, Victor, both of N.Y., assignors to The Gleason Works

Filed Apr. 7, 1980, Ser. No. 138,037

Int. Cl.[5] B23F *5/22*; B23F *5/28*

U.S. Cl. 409—11 **8 Claims**



1. In a machine for cutting gears and other toothed workpieces, and of the type in which a series of cutting tools are arranged on successive links of an endless chain,

each tool being in offset relation to the preceding tool of the chain, at right angles to the direction of travel,

said chain being arranged with a straight portion such that the tools travel substantially in a plane when cutting, and in which there is also provided

a machine base,

a rotatable work spindle, for carrying one or more workpieces, mounted in a workhead and having a rotational axis parallel to the plane of tool travel,

means for relatively angularly adjusting the chain and the work spindle for making a helix angle setting,

means for driving said endless chain and said work spindle in timed relationship, and means for effecting relative movement of the chain and the work spindle to bring tools and workpieces to and from working engagement, the improvement in said machine comprising

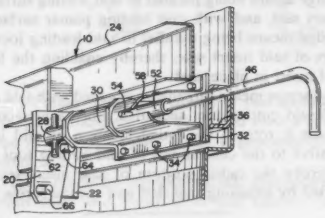
automatic shifting means, operatively independent of said driving means, for effecting unidirectional intermittent lateral movement of said workhead and work spindle when the tools and workpieces are disengaged, said movement being parallel with said plane of tool travel and at an angle to the direction of said travel.

4,318,649

LOCKING MECHANISM FOR B DECK OF AUTO-RACK RAILWAY CAR

David J. Roldness; Jerry L. Archambeault, both of San Diego, and Robert L. Barkhimer, Chula Vista, all of Calif., assignors to Pullman Incorporated, Chicago, Ill.

Filed Apr. 16, 1980, Ser. No. 140,902
Int. Cl.³ B61D *3/02*
U.S. Cl. 410—27 **8 Claims**



1. In a multi-level auto-rack railway car, the combination of, a hinged deck section which is swingable between a lower position and an upper position, and a locking mechanism for retaining said hinged deck section in either of said positions;

said locking mechanism comprising a lock plate connected to said hinged deck section and movable therewith,

a housing fixedly mounted on said auto-rack car including a plunger slidably and rotatably mounted for movement between a release position in which said plunger is disengaged from said lock plate and a locking position in which said plunger is in interlocking engagement with said lock plate,

means for biasing said plunger to said locking position;

means for retaining said plunger in said release position against the force of said; means for biasing; and

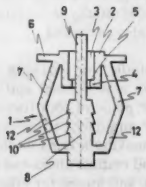
means for disabling said means for retaining said plunger whereby movement of said hinged deck section from either the upper or lower positions moves said plunger to said locking position under the force of said means for biasing.

4,318,650

PLUG-RIVET FOR SECURING PANELS OR THE LIKE

Joaquin R. LLauge, Barcelona, Spain, assignor to ITW Espana S.A., Barcelona, Spain

Filed Jul. 22, 1980, Ser. No. 171,213
Claims priority, application Spain, Jul. 23, 1979, 244.708[U]
Int. Cl.³ F16B *13/04*
U.S. Cl. 411—38 **3 Claims**



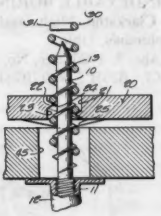
1. Improved plug-rivet for securing panels of the like of the type comprised of a flexible one-piece molded plastic body forming a type of enlarged flexible hexagonal frame, at one of the sides whereof is disposed a cylindrical cup-shaped head provided with a pre-determined diameter large bore and an inner smaller diameter diameter aperture opening through the base thereof, said head having a laterally extending flange forming a sharp angle with the upper lateral sides of the frame; at the opposite lower side of said frame is disposed a cylindrical appendix having a portion of pre-determined diameter smaller than that of the aperture in the base of said head and a second larger portion having a plurality of frusto-conical segments provided with annular teeth to be fixed or retained in the lower aperture of the mentioned cylindrical head, essentially characterized in that said cylindrical appendix includes a shank having a small diameter which passes through the aperture and bore corresponding to the head and protruding therefrom, said head being substantially continuous and spaced laterally from said frame and capable of lateral expansion when said shank constituting the gripping point for the tool used to pull same causes the cylindrical appendix to be housed in the head in a tight fit condition.

4,318,651

FASTENER FOR BLIND HOLES

Peter D. Ragen, 921 S. 102nd St., West Allis, Wis. 53214

Filed Apr. 8, 1980, Ser. No. 138,465
Int. Cl.³ F16B *35/04*
U.S. Cl. 411—342 **7 Claims**



1. In a toggle screw set, a screw having a thread, an intermediate member having an inside diameter less than the thread crest diameter of the screw and larger than the root diameter of the screw thread, said intermediate member having an outside diameter substantially greater than the crest diameter of the threads, and a unitary toggle having a hole provided with at least part of a thread larger than the screw thread to receive said screw and said intermediate member, the thread root diameter of the hole in the toggle being larger than the outer diameter of said intermediate member, and the crest diameter of the thread in the hole in the toggle being less than the outer diameter of the intermediate member and less than the thread crest diameter of the screw, said intermediate member extending axially respecting said screw and connecting the screw flexibly to the unitary toggle, and less than the thread crest diameter of the screw said screw and said intermediate member being screwed telescopically into the hole in the toggle.

4,318,652

CONNECTOR PLATE

Charles E. Gore, Seattle, Wash., assignor to Truswal Systems Corporation, Madison Heights, Mich.

Filed Jun. 29, 1979, Ser. No. 53,366
Int. Cl.³ F16B *15/00*
U.S. Cl. 411—468 **12 Claims**

1. A connector plate for joining together wooden members comprising:

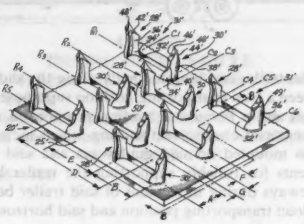
(a) a thin metal plate;

(b) a plurality of longitudinally extending rows of elongate teeth struck out from said plate to extend outwardly from

one face of said plate, said teeth being struck out and longitudinally aligned, spaced pairs with each of said pairs of teeth leaving a single, elongate slot in said plate between the two teeth of each pair of said teeth; and

(c) each tooth of each of said pair of teeth comprising: an elongate shank section having a base portion at the intersection of said shank section and said plate, and an upper portion extending upwardly from said base portion,

a tip section extending upwardly from said shank section, and



the shank base portion of each tooth of each of said pair of teeth being slightly twisted about an axis extending longitudinally of the height of said tooth with the shank upper portion of said tooth being rotated with the base portion but remaining generally untwisted throughout the length of the shank upper portion so that the shank upper portion extends laterally outwardly of the corresponding twisted shank base portion.

4,318,653

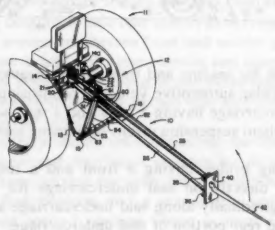
HAY LOADER

William F. Benefield, and Elmer D. Larkin, both of Rte. 1, Cooper, Tex. 75432

Filed Nov. 5, 1979, Ser. No. 91,527

Int. Cl.³ A01D *87/12*; B60P *1/16*

U.S. Cl. 414—24.5 **4 Claims**



1. A hay handling apparatus for engaging and lifting cylindrical bales of hay, for attachment to and cooperation with the three point hitch system of a tractor, said hitch system being of the kind having a first implement attachment point or top hitch point located relatively high on the back end of the tractor, and second and third implement attachment points or lower hitch points each located on the end of a swing arm extending rearwardly from the back end of the tractor and selectively movable by power means provided in said tractor to different elevations, and a horizontally extending draw bar pivotally connected at its ends between said lower hitch points, said apparatus comprising:

two rigid continuous extension bars extending outwardly and rearwardly from said tractor, each pivotally attached by vertically pivotal means to said top hitch point, said extension bars being disposed on said top hitch point, one above the other;

two upright columns, one extending upwardly from each end of said drawbar;

attachment means pivotally attaching the upper of said extension bars to an elevated position upon said uprights;

a spear mounting plate pivotally attached to the outwardly extended ends of said extension bars;

a spear projecting from the outwardly facing surface of said spear mounting plate;

the lower extension bar being unattached to said uprights and thus freely movable between between said top hitch point and said spear mounting plate; and

said rigidity and continuity of said extension bars, and said pivotal attachments to said bars acting together to apply lifting forces to said spear through the upper extension bar and to control orientation of said spear during raising and lowering thereof;

whereby upon translation of said tractor, said spear may be inserted into or removed from a hay bale, and upon elevation and depression of said lower hitch points by said power means, the hay bale may be lifted and lowered.

4,318,654

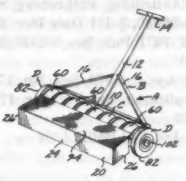
TENNIS BALL RETRIEVING DEVICE

Delbert Lee, Riverside, Calif., assignor to Alpha Nova Engineering Corp., Irvine, Calif.

Filed Jul. 28, 1980, Ser. No. 172,532

Int. Cl.³ B60P *1/00*

U.S. Cl. 414—440 **8 Claims**



1. A device for retrieving a plurality of tennis balls scattered at random over a tennis court without damaging the surface of said court, said device including:

a. a frame assembly that includes an elongate cross-piece, a handle that extends upwardly and rearwardly from said cross piece, a pair of laterally spaced parallel legs that extend forwardly from said cross piece, an elongate tennis ball receiving basket that includes a bottom, a forward wall, a pair of side walls secured to said legs, a rearward wall, and a plurality of parallel laterally spaced, rearwardly extending tennis ball extractors, a pair of aligned openings formed in said legs;

b. a tennis ball retrieving assembly that includes a pair of first hubs rotatably supported in fixed positions in said openings in said legs, each of said first hubs having an inwardly and outwardly disposed flat end surface, a pair of circular flanges that projects outwardly from said inner ends of said first hubs, a plurality of circumferentially spaced parallel rods that extend between said flanges, a plurality of pairs of resilient disks that are engaged by said rods, each of said pairs of disks laterally spaced a distance less than the diameter of one of said tennis balls, each of said pair of disks including a pair of axially aligned second hubs, a plurality of ring-shaped spacers disposed between said pairs of disks, and a plurality of beads on the outer peripheries of said disks that extend towards one another and serve to removably maintain a tennis ball within the space between said pair of disks, and said outer ends of said first hubs having first clutch surfaces defined thereon;

c. an elongate shaft that rotatably supports said first and second hubs and said spacers, said shaft having end portions that project outwardly from said first hubs;

d. a pair of wheels that include third hubs that have inner

and outer end surfaces, said third hubs rotatably supported on said outwardly projecting end portions of said shaft, said inner ends of said third hubs defining second clutch surfaces, said wheels including resilient rims of a greater external diameter than that of said pairs of disks, and said pair of wheels including rigid means that extend outwardly from said third hubs to said rims;

e. a pair of stops mounted on the extremities of said shaft;

f. a pair of compressed helical spring means that extend between said stops and third hubs that at all times tend to maintain said first and second clutch faces in engagement for said pairs of disks to so rotate that the forward portions of each of said pairs of disks that encounters a tennis ball on said court to be moving downwardly relative thereto to force said tennis ball into the annular space between said pair of disks and said beads on said pair of disks serving to prevent said tennis ball escaping therefrom until said tennis ball has been rotated to encounter one of said tennis ball retrievers to be displaced from between said pair of disks and roll forwardly into said basket, with said randomly scattered tennis balls on said court being retrieved and deposited in said basket as said device is moved over the surface of said court; and

g. means for preventing said plurality of pairs of disks rotating when said device is rolled rearwardly.

4,318,655

DEVICE FOR RAISING AND TRANSPORT OF GOODS

Gustav E. W. Svensson, Holm, Sweden, assignor to Basab Materialhantering Aktiebolag, Falkenberg, Sweden

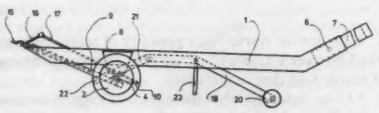
PCT No. PCT/SE79/00080, § 371 Date Dec. 13, 1979, § 102(e) Date Dec. 13, 1979, PCT Pub. No. WO79/00936, PCT Pub. Date Nov. 15, 1979

PCT Filed Apr. 2, 1979, Ser. No. 173,934

Claims priority, application Sweden, Apr. 17, 1978, 7804292; Jul. 26, 1978, 7808150

Int. Cl.³ B60P *1/04*

U.S. Cl. 414—434 **11 Claims**



1. A device for raising and transport of goods comprising a wheel-carried frame with a handle, a lever means arranged in the wheel-carried frame and insertable under the goods for raising the goods and thereafter pivotable during movement of the wheel-carried frame under the goods to a transport position, said pivotability being such that the lever means moves in a direction opposite the direction in which it is inserted under the goods, and after which the goods rest on the frame, said lever means having a first part initially insertable under the goods and a second part frictionally engageable with the goods during pivoting movement to the transport position and being arranged on a shaft for the wheels of the frame.

4,318,656

EQUIPMENT TRAILER WITH SHIFTABLE TRAILER BED

Charles R. Ezell, Rte. 1, P.O. Box 69, Sondheimer, La. 71276

Filed Dec. 20, 1979, Ser. No. 105,571

Int. Cl.³ B60P *1/34*

U.S. Cl. 414—471 **12 Claims**

11. An equipment trailer especially suitable for transporting farm implements and the like by means of a pulling vehicle such as a pickup truck, comprising:

a wheeled chassis having a main axle;

a slide assembly pivotably mounted to said chassis for pivotal movement about an axis substantially parallel to the main axle, said slide assembly including a pair of parallel guideways arranged longitudinally of the trailer, said guideways each having a V-shaped track;

a trailer bed mounted on the slide assembly, said trailer bed comprising a frame having a pair of side frame elements with a diamond cross-section, said side frame elements being cooperatively received in said guideways; and

said slide assembly and trailer bed including means for shifting the trailer bed longitudinally along the slide assembly between a load transporting position superposed over said chassis and a horizontal loading position on the ground adjacent said chassis, said shifting means including roller means mounted on said guideways and said side frame elements for rollably supporting the trailer bed in said guideways during movement of said trailer bed between said load transporting position and said horizontal loading position.

4,318,657

VEHICLE FOR LOADING AND TRANSPORTING HEAVYWEIGHT OBJECTS IN PARTICULAR AUTOMOTIVE VEHICLES

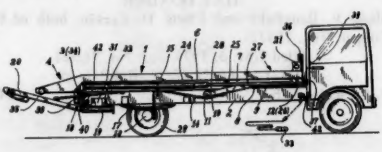
Kruno Znidaric, No. 12, Bernsteinweg, 8000 München 45, Fed. Rep. of Germany

Filed Nov. 5, 1979, Ser. No. 91,627

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1978, 2848904

Int. Cl.³ B60P *3/12*

U.S. Cl. 414—478 **14 Claims**



1. A vehicle for loading and transporting heavyweight objects, in particular automotive vehicles, comprising:

(a) an undercarriage having a front and a rear portion;

(b) rear resilient suspension means supporting said undercarriage;

(c) a loading bridge having a front and a rear end and mounted directly on said undercarriage for movement both longitudinally along said undercarriage and tiltably about said rear portion of said undercarriage;

(d) at least one longitudinally extending power device extending between a forward position on said loading bridge and a rearward position on said undercarriage, relative to said forward position on said loading bridge;

(e) at least one pivot lever, means slidably mounting one end of said pivot lever on said loading bridge adjacent the forward end thereof, and pivot means mounting the opposite end of said pivot lever on said undercarriage rearwardly of said slidably mounting means and below the effective line of said power device, said slidable mounting means being adapted to permit said one end of said pivot lever to slide along a predetermined path substantially parallel to said loading bridge and including abutment means at the forward end of said path; and

(f) means actuated by tilting movement of said loading bridge for compressing said resilient suspension means;

(g) whereby as said power device is retracted said loading bridge is caused to move rearwardly along said undercarriage until said one end of said pivot lever engages said

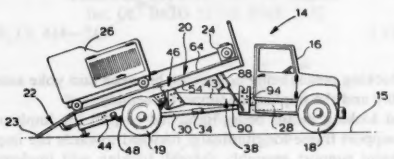
abutment means of said slidably mounting means, said loading bridge is then caused to tilt with the forward end thereof driven upwardly by pivotal movement of said pivot lever and the rearward end thereof caused to move downwardly, and said resilient suspension means is compressed by said compressing means to lower said rear portion of said undercarriage.

4,318,658

TILTING DECK VEHICLE

Raeburn C. McIntyre, 175 Greenwood Village, Sherwood Park, Alberta, Canada

Continuation of Ser. No. 910,225, May 30, 1979, abandoned. This application Dec. 6, 1979, Ser. No. 101,030
Int. Cl.[3] B60P *1/00*
U.S. Cl. 414—480 **7 Claims**



1. A vehicle which comprises:

a front frame section;

a motive power source on said front frame section;

a rear frame section coplanar with the front frame section when the former is in a generally horizontal lowered first position;

a transversely extending rear axle carrying ground engaging rear wheels and supporting the said rear frame section;

a drive transmission shaft extending longitudinally between said motive power source and said rear axle and operatively coupled to said rear axle so as to transmit rotational drive movement thereto from said motive power source;

slip means in said drive transmission and adapted to accommodate limited shortening of said drive transmission shaft on forward movement of said rear axle toward said motive power source;

pivot means pivotally interconnecting the abutting ends of said front and rear frame sections for movement of said rear frame section between the generally horizontal lowered first position and a rearwardly and downwardly inclined second position about a pivot axis positioned sufficiently close to said rear axle that, on movement of said rear frame section out of said generally horizontal lowered first position thereof and into said inclined second position thereof, the resulting forward movement of said rear axle relative to said motive power source does not exceed said limited shortening of said drive transmission shaft which said slip means is adapted to accommodate, said pivot axis being positioned forwardly of said rear axle, and further being positioned below said rear frame section when that section is in said lowered first position thereof;

a deck fixed on said rear frame section for conjoint pivotal movement therewith and extending generally forwardly over said front frame section when said rear frame section is disposed in said generally horizontal lowered first position thereof; and

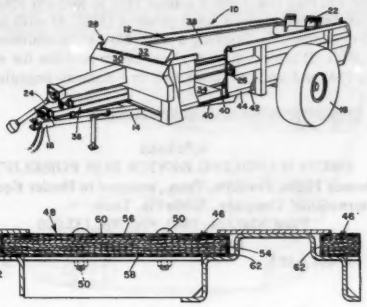
tilting drive means for moving said deck and said rear frame section between said lowered first position and said inclined second position thereof.

4,318,659

MANURE SPREADER BOX

David A. Willer, Welland; Rory Rae, Wainfleet, and Gerardus A. Veldhoven, St. Catharines, all of Canada, assignors to Deere & Company, Moline, Ill.

Filed Apr. 14, 1980, Ser. No. 139,917
Int. Cl.[3] B60P *1/00*; B32B *27/06*
U.S. Cl. 414—511 **15 Claims**



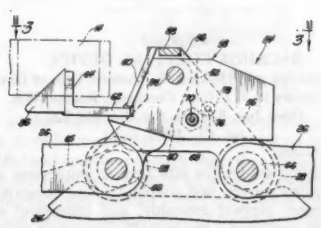
1. In a manure spreader comprising a material containing box open at its rearward end for normally containing animal wastes which include organic acids and salts, said box having a fore-and-aft extending and generally horizontal floor, a transversely extending and upright wall at the forward end of the floor, transversely spaced upright wall supports joining the wall and extending rearwardly therefrom, and transverse structure extending between the supports and shiftable rearwardly therebetween to move the wastes toward the open end; and wall panels carried on the wall support, each panel comprising a generally light, impact resistant material subject to deterioration and expansion by the acids and salts and having inwardly and outwardly facing generally flat sides to which is bonded a non-porous, impact resistant structure, the resistant structure bonded to the inwardly facing sides being immediately adjacent and in sliding contact with the transverse structure as it is shited rearwardly, wherein the faces of the respective panels are joined by edges with each edge having a liquid repellant structure bonded thereto, wherein the impact resistant structure and liquid repellant structures form a continuous barrier around the impact resistant material resistant to attack by the organic acids and salts.

4,318,660

WORK TRANSFER ASSEMBLY

David L. Checkley, Howell, and Larry W. Renton, Livonia, both of Mich., assignors to Atmosphere Furnace Company, Wixom, Mich.

Filed Apr. 15, 1980, Ser. No. 140,518
Int. Cl.[3] B65G *25/10*
U.S. Cl. 414—518 **25 Claims**



1. A work transfer assembly comprising; transfer car means

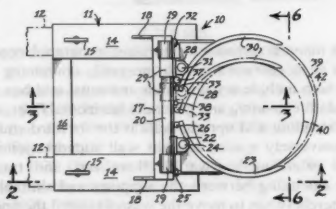
(10) movable along a path (12) for transporting a workpiece carrier tray (14) between separate processing stations (16) positioned along said path (12), said car means (10) including push-pull means for moving a tray (14) in directions laterally of said path (12) to move the tray (14) into and out of processing stations (16) said push-pull means characterized by a single unitary coupler member (58) having a push abutment (60) for abutting a tray (14) to push the tray (14) from said car means (10) to a station (16) and a pull hook (64) for hooking a tray (14) to pull the tray (14) from a station (16) to said car means (10) and rotatable between a hook position (FIG. 4) with said pull hook in position for hooking a tray (14) and an abutment position (FIG. 5) with said push abutment in position for abutting a tray (14) and said pull hook (64) in a nontray-engaging position.

4,318,661

DRUM HANDLING DEVICE FOR FORKLIFT

J. Thomas Helm, Franklin, Tenn., assignor to Dozier Equipment International Company, Nashville, Tenn.

Filed Mar. 24, 1980, Ser. No. 133,020
Int. Cl.³ B66F 9/18
U.S. Cl. 414—607 **8 Claims**



1. A drum handling device for attachment to a forklift truck having forks, comprising:
(a) a frame having longitudinal and transverse dimensions,
(b) means for detachably mounting said frame on the forks of a forklift truck,
(c) a rotary shaft having a rotary axis,
(d) journal means on said frame supporting said rotary shaft for rotary movement about its rotary axis transversely of said frame,
(e) at least two gripping arms, including first and second opposed gripping arms adapted to grip opposite sides of a drum,
(f) first bracket means supporting said first gripping arm and operatively mounted on said rotary shaft for simultaneous rotary movement with said rotary shaft,
(g) second bracket means supporting said second gripping arm and operatively mounted on said rotary shaft for simultaneous rotary movement with said rotary shaft and for axial movement relative to said rotary shaft, and
(h) means for limiting the axial movement of said second bracket means on said rotary shaft while said second gripping arm is in its lowermost operative position.

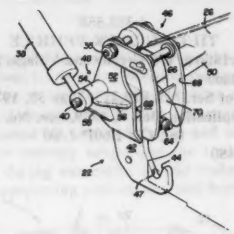
4,318,662

BACKHOE COUPLING DEVICE

Allen O. Erickson, and Howard W. Thomas, both of Davenport, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Jun. 5, 1980, Ser. No. 156,822
Int. Cl.³ B66F 9/00
U.S. Cl. 414—686 **4 Claims**

4. A coupling device for attaching an implement support frame to a prime mover, said coupling device comprising:
an implement support assembly, said implement support assembly including a downwardly depending main frame bracket having an implement attachment pin receiving recess at its lower end, said recess holding an implement attachment pin which is mounted to said implement support frame;
a yoke assembly pivotally attached at one of its ends to the upper end of said implement support assembly and said yoke assembly being pivotally attached to said implement support frame, said yoke assembly extending downwardly from the upper end of said implement support assembly in a spaced apart, cantilevered fashion, said yoke assembly including adjustable locking means at its lower end, said



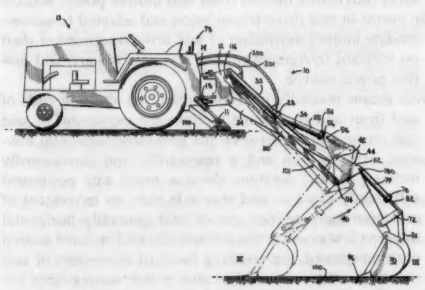
locking means being connected between said yoke assembly and the implement support assembly; and
said locking means being tightened to pull the implement support frame longitudinally forward towards the implement support assembly thereby locking said implement attachment pin within the frame bracket pin receiving recess whereby play or movement at the attachment points between the implement support frame and prime mover is substantially eliminated.

4,318,663

LEVELLING DEVICE FOR A MATERIAL HANDLING MEMBER

Jerry A. Waite, Racine, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Mar. 13, 1980, Ser. No. 130,147
Int. Cl.³ E02F 3/32
U.S. Cl. 414—707 **13 Claims**



4. Apparatus for an offroad machine to be used in material handling, excavation operations and the like, comprising:
(a) a support frame joined to said machine;
(b) a boom pivotally mounted on said support frame;
(c) a dipper stick pivotally joined to said boom at a point intermediate the ends of said dipper stick;
(d) a material handling member carried by the free end of said dipper stick and positioned with its digging edge resting along the grade;
(e) hydraulic means including a first piston and cylinder actuator pivotally connected between said boom and said support frame for actuating: the dipper stick to pivot said dipper stick relative to said boom; the boom to pivot said

boom relative to said supporting frame; and the material handling element to pivot said material handling element relative to said dipper stick, said hydraulic means moving the material handling element towards and away from said supporting frame; and

(f) bell crank means, carried by said hydraulic means and said support frame, for moving the end of said boom relative to the support frame and the material handling member relative to said dipper stick as said dipper stick is repositioned relative to said boom by inducing retraction of said piston relative to said cylinder and having the effect of pivotally moving the boom relative to said support frame, said bell crank means repositioning said material handling element in a path generally parallel to said grade without manipulation of said boom.

4,318,664

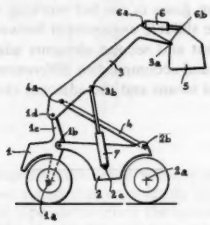
SELF-STABILIZING LOAD LIFTING AND HANDLING VEHICLE

Pierre Gibert, 3, rue Victor Duruy, 75015 Paris, France

Filed May 20, 1980, Ser. No. 152,064

Int. Cl.³ B62D *53/02*; E02F *3/72*

U.S. Cl. 414—719 **3 Claims**



1. A self-stabilizing load lifting and handling vehicle, comprising:

a chassis having a front chassis element supporting a wheel-bearing front axle, and having a rear chassis element supporting a wheel-bearing rear axle, the chassis elements being coupled together by a chassis pivot pin, and the axles and pivot pin being disposed horizontally in the travel position of the vehicle with the pivot pin being located higher on the vehicle than the axles;

a boom disposed above the chassis and extending from a horizontal boom pivot pin near its rear end to a load supporting attachment near its front end, the boom pivot pin securing the boom to the rear chassis element at a location above the chassis pivot pin; and

horizontal pivot means carried by the front chassis element and by the boom intermediate its ends, and said pivot means supporting means coupling the boom and the front chassis element and including means operative to raise the boom while pivoting the chassis elements to increase the spacing between said axles, and to lower the boom while pivoting the chassis elements to decrease said spacing.

4,318,665

MACHINING CENTER WITH TOOL SHUTTLE

Richard R. Carroll, Chagrin Falls, and Alan M. Papp, Eastlake, both of Ohio, assignors to Litton Industrial Products, Inc., Cleveland, Ohio

Filed Feb. 7, 1980, Ser. No. 119,375

Int. Cl.³ B23Q *3/157*; B25J *5/02*

U.S. Cl. 414—728 **8 Claims**

1. A tool changing mechanism for a machining center comprising

arcuate shuttle path means including rail means having a uniform width with opposing sides and a gear track parallel to said rail means, and

a tool shuttle including

a housing,

a tool change arm secured to said housing,

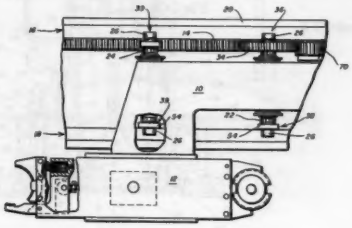
shuttle path engagement means including

post means,

means for mounting said post means on said housing for selective rotation about a vertical axis,

a pair of guide rollers having vertical axes,

means for mounting said pair of guide rollers on said post means for engaging said opposing rail sides and concentrically located about said post axis so that said guide



rollers can selectively change their orientation to automatically maintain an orthogonal relation thereto while said shuttle traverses said arcuate shuttle path,

a driven gear concentrically mounted on said post means for rotational movement relative to said post means and for engagement with said gear track, and

means for driving said driven gear, whereby said shuttle may traverse the arcuate shuttle path maintaining said gear in continuous driving engagement with said gear track while the orientation of said guide rollers changes maintaining continual orthogonal engagement with the opposing rail sides.

4,318,666

COOLED SHROUD FOR A GAS TURBINE ENGINE

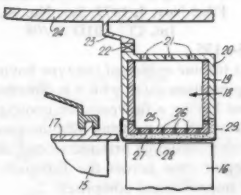
George Pask, Stanton-by-Bridge, England, assignor to Rolls-Royce Limited, London, England

Filed Jun. 17, 1980, Ser. No. 160,903

Claims priority, application United Kingdom, Jul. 12, 1979, 24365/79

Int. Cl.³ F02C *7/12*

U.S. Cl. 415—116 **5 Claims**

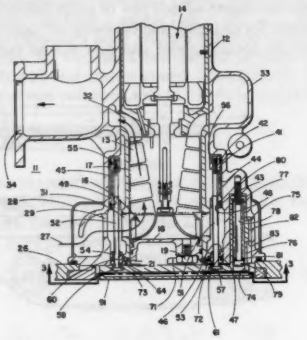


1. A cooled shroud for a gas turbine engine comprising an annular metallic supporting member having an inner and an outer face and apertures therethrough for the flow of cooling fluid to the inner face, a layer of porous material secured to said inner face and through which the cooling fluid may permeate and an impermeable layer of ceramic overlying part of said porous layer so as to prevent said cooling fluid flowing from said porous layer except in predetermined areas.

4,318,667
ACTUATING MECHANISM FOR FLUID PUMP INLET CLOSURE VALVE

Edwin K. Miller, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 27, 1979, Ser. No. 79,638
Int. Cl.³ F01D *15/10*
U.S. Cl. 415—121 R **20 Claims**



1. In a fluid holding receptacle, including in combination,

a pump housing projecting into said fluid holding receptacle and integral therewith, said pump housing having an inlet opening to allow passage of fluid from said receptacle into said pump housing,

a pump inlet closure valve sleeve positioned within said pump housing and mounted for movement in a predetermined path,

a pump positioned within said pump closure valve sleeve,

a valve sleeve actuating means having a handle pivotally secured to said pump housing and slideably moveable in a direction parallel to said predetermined path, said handle mechanically coupled to said valve sleeve and extending to block removal of said pump along said predetermined path, whereby initial manual movement of said handle causes said valve sleeve to move into a position blocking said inlet opening whereupon subsequent pivotal movement of said handle allows for the unobstructed passage of said pump from said housing.

4,318,668
SEAL MEANS FOR A GAS TURBINE ENGINE

Gary F. Chaplin, Vernon; Frederick M. Schwarz, Glastonbury, and James G. Griffin, West Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 1, 1979, Ser. No. 90,187
Int. Cl.³ F01D *25/08*
U.S. Cl. 415—135 **6 Claims**

3. In a gas turbine engine of the type having a flowpath for hot working medium gases which is circumscribed by an engine case and having a flowpath for cooling air disposed between the flowpath for working medium gases and the engine case, and further including first and second elements extending from the engine case across the flowpath for cooling air, wherein the improvement comprises:

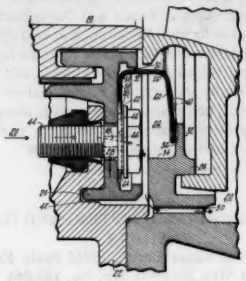
means inwardly of the engine case extending between said first and second elements and extending to define a flowpath for cooling air between said means and the engine case, said means having a center section in close proximity to the hot working medium flowpath,

a first leg extending outwardly from the center section to slidably engage said first element,

and

a second leg spaced axially from said first leg, the second leg extending outwardly to slidably engage said second element,

wherein the center section adapts the means to develop a sealing force by elongating which causes the first leg and the second leg to exert a sealing force against the first element and

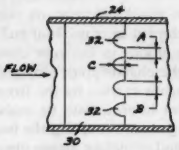


the second element in operative response to the flow of hot working medium gases in the hot working medium flowpath and wherein the slidable engagement between the seal means and both the first and second elements adapts the means to provide sealing and accommodate differences in radial growth between the seal means and the adjacent elements.

4,318,669
VANE CONFIGURATION FOR FLUID WAKE RE-ENERGIZATION

Arthur J. Wennerstrom, Montgomery County, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 7, 1980, Ser. No. 110,146
Int. Cl.³ F01D *9/00*
U.S. Cl. 415—119 **4 Claims**



1. An aerodynamic system, comprising: an air flow duct; means for changing the direction of air flow within said duct; said means for changing the direction of airflow within said duct including a stationary vane in the form of an airfoil having a pressure surface and a suction surface; a diffuser downstream of said airfoil, with the wake of said airfoil passing through the diffuser; said airfoil including a plurality of crenelations in the downstream edge thereof for producing pairs of counter rotating vortices to provide rapid mixing of low momentum fluid in the wake with the adjacent fluid streams to re-energize the wake fluid, the width of said crenelations, the spacing between adjacent crenelations and the depth of the crenelations differing from each other by a factor of less than two; the depth of the crenelations being between 5 and 20 percent of the chord length of said airfoil.

4,318,670

SCREW PUMP FOR CONVEYING WASTE WATER AND THE LIKE

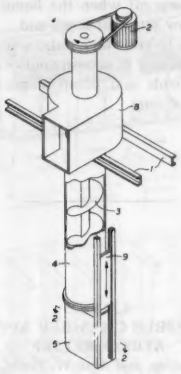
Leonhard Fechter, Kulmbach, and Günter Nudinger, Aarbergen, both of Fed. Rep. of Germany, assignors to Passavant-Werke Michelbacher Hutte, Fed. Rep. of Germany

Filed Jan. 4, 1980, Ser. No. 109,814

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1979, 2903277

Int. Cl.³ F02C 3/02

U.S. Cl. 415—72 9 Claims



1. A screw pump for conveying waste water and the like having at least one substantially vertically arranged drivable screw with a fixed pipe surrounding the screw and defining a conveying channel and with the pipe having a side inlet opening at the lower end thereof and a discharge opening at the upper end thereof, the improvement in that an upstanding baffle member is mounted below the screw with at least the upper portion of said baffle member being located at one side of said side inlet opening and extending radially in the direction of conveyance and with the pipe surrounding said screw having a closed floor.

4,318,671

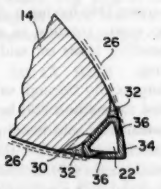
EFFICIENCY SHIP PROPELLER

Gerard P. Canevari, Cranford, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 494,698, Oct. 11, 1965, abandoned. This application Aug. 8, 1966, Ser. No. 570,872

Int. Cl.³ B64C 11/20; F01D 5/14

U.S. Cl. 416—90 A 5 Claims



1. A ship propeller comprising, a plurality of blade means each having a leading edge portion and a rearward facing power face, passageway means extending along the leading edge portion of each blade, said passageway means being defined by a generally triangular cross-section length of tubing, one exterior surface of said triangular tubing being secured by brazing to a leading edge portion of said blade means, and rearwardly inclined orifice means in the other two surfaces of said triangular tubing placing said passageway means in communication with the rear power face and opposite face of each blade for permitting a viscoelastic polymer to be discharged therefrom to suppress formation of turbulent flow along said power face and opposite face.

4,318,672

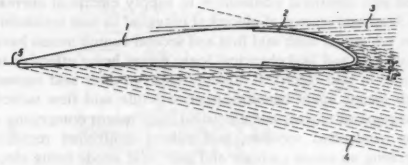
PARTICLE EROSION RESISTANT COVERING FOR FAN BLADE LEADING EDGE

Bent B. Hansen, Naestved, Denmark, assignor to Nordisk Ventilator Co. A/S, Naestved, Denmark

Filed Nov. 6, 1978, Ser. No. 958,327

Int. Cl.³ F01D 5/28

U.S. Cl. 416—224 8 Claims



1. A wear-resisting attachment for application to a surface portion of a metallic member, particularly a blade of a fan or a turbine, for protecting said surface portion against erosion from abrasive particles carried by a substantially linear air flow, to which said surface portion is exposed, said abrasive particles striking different parts of said surface portion under varying impact angles, comprising: at least two superimposed wear-resisting layers, one of said layers being relatively ductile and providing an erosion sensitivity versus particle impact angle characteristic which is complementary to that of at least one other, relatively brittle layer over a range of impact angles extending from 0 degrees to 90 degrees, said one layer having a maximum erosion sensitivity in a first, smaller angle portion of said range in which said at least one other layer is relatively resistant to erosion, and said one layer being relatively resistant to erosion in a second, larger angle portion of said range in which said at least one other layer has a maximum erosion sensitivity.

4,318,673

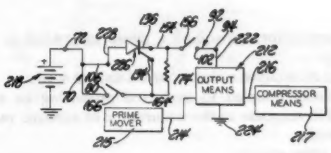
PRESSURE SWITCH AND CIRCUIT MEANS

Aloysius J. Kochanski, Southfield, Mich.; Frank D. Mowery, and Charles J. Hire, both of Mansfield, Ohio, assignors to Hi-Stat Manufacturing Company, Inc., Lexington, Ohio

Continuation of Ser. No. 818,607, Jul. 25, 1977, abandoned. This application Feb. 5, 1979, Ser. No. 9,100

Int. Cl.³ F04B 49/00, 49/06

U.S. Cl. 417—15 17 Claims



1. A control system for controlling the magnitude of the pressure of a refrigerant in the low pressure section of a refrigeration cycle, comprising compressor means for compressing said refrigerant and consequently reduce the magnitude of said pressure within said low pressure section, actuatable means effective for driving said compressor means, and circuit means

operatively interconnecting said actuatable means and a source of electrical potential for at times actuating said actuatable means for causing said compressor means to be driven, said circuit means comprising first normally open electrical switch means, second normally open switch means, means responsive to the magnitude of said pressure of said refrigerant within said low pressure section for at times closing said first and second switch means, said means responsive to the magnitude of said pressure being effective to close said first switch means when said magnitude attains a first preselected relatively low value, said means responsive to the magnitude of said pressure being effective to close said second switch means when said magnitude attains a second preselected relatively high value, electrical logic means electrically connected in circuit with said first and second switch means, said electrical logic means being placed into electrical connection to supply electrical current flow from said source of electrical potential to said actuatable means whenever both said first and second switch means have been closed, and said electrical logic means being effective to continue in said electrical conduction even after said second switch means again becomes opened while said first switch means remains closed, said electrical logic means comprising a silicon controlled rectifier, said silicon controlled rectifier comprising an anode cathode and gate, said anode being electrically connected to said source of electrical potential, said cathode being electrically connected to said first switch means, said gate being electrically connected to said source of electrical potential through said second switch means, and further comprising electrical resistance means, said electrical resistance means being electrically connected across said gate and cathode as to have one electrical end thereof generally between said first switch means and said silicon controlled rectifier and an other electrical end thereof generally between said silicon controlled rectifier and said second switch means.

4,318,674

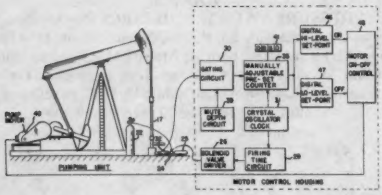
AUTOMATIC LIQUID LEVEL CONTROLLER

John K. Godbey, Dallas, and Billy G. Ballard, Garland, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 749,940, Dec. 13, 1976, abandoned, which is a continuation of Ser. No. 563,249, Mar. 28, 1975, abandoned. This application Aug. 8, 1977, Ser. No. 822,506

Int. Cl.[3] **F04B** *49/00*

U.S. Cl. 417—36 **30 Claims**



1. Apparatus for controlling a pump suspended in a well comprising:

a source of acoustic pulses coupled to said well;

a transducer coupled to said well producing an electric signal in response to the occurrence of acoustic pulses in said well;

a clock pulse source;

digital counting means;

gating means responsive to the output of said transducer for starting the counting of clock pulses by said digital counting means upon the occurrence of an acoustic pulse in said well and for stopping said counting upon detection of the acoustic pulse reflected from the liquid surface in said well;

a digital controller responsive to said digital counting means for controlling said pump, said digital controller including:

a high level set-point circuit including a manually settable digital register calibrated in units of depth;

a low level set-point circuit including a manually settable digital register calibrated in units of depth;

a comparator, said digital registers and said counting means being connected to said comparator, said comparator being connected to turn said pump on when the liquid in said well exceeds the high set-point level and to turn said pump off when the liquid in said well falls below the low set-point level; and

means responsive to said clock pulse source for repetitively actuating said source of acoustic pulses so that said digital controller controls said pump at pre-determined times over a period of time.

4,318,675

ROTARY EXPANSIBLE CHAMBER APPARATUS WITH STRESS RELIEF

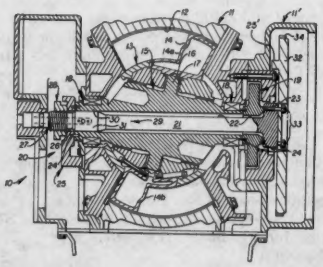
John M. Clarke, Dunlap, and Alan W. Wells, Edelstein, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/01128, § 371 Date Dec. 14, 1979, § 102(e) Date Dec. 14, 1979, PCT Pub. No. WO81/01723, PCT Pub. Date Jun. 25, 1981

PCT Filed Dec. 14, 1979, Ser. No. 120,431

Int. Cl.[3] **F01C** *1/00, 21/08;* **F16B** *35/04*

U.S. Cl. 418—53 **4 Claims**



1. In a rotary apparatus (**10**) having a shaft (**15**) and a rotor (**13**) mounted for eccentric rotation in a housing (**11**), said rotation imposing bending loads on said shaft (**15**), the improvement comprising:

a bolt (**21**) extending axially through said shaft (**15**);

a nut (**28**) connected to said bolt (**21**) by screw threads (**27**);

means (**29**) for transmitting said bending loads to said bolt (**21**) and for protecting said screw threads (**27**) from said bending loads, said means (**29**) including a portion (**30**) of said shaft (**15**) engaged with a portion (**31**) of said bolt (**21**);

means for counteracting axial loads imposed on said shaft (**15**) by said rotor (**13**), said means being a thrust collar (**19**);

said bolt (**21**) has an annular flange (**23**) on an end thereof and wherein said thrust collar (**19**) is clamped axially between said flange (**23**) and said shaft (**15**); and

means (**22**) for defining an annular clearance between said bolt (**21**) and said thrust collar (**19**) and between said bolt (**21**) and a substantial axial length of said shaft (**15**).

4,318,676

DEVICE FOR SPINNING ENDLESS FILAMENTS

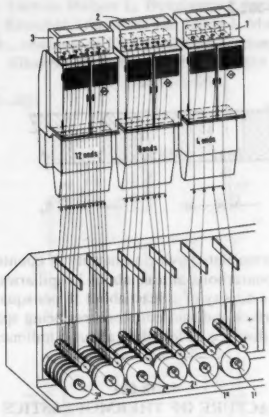
Lüder Gerking, and Günter Panke, both of Berlin, Fed. Rep. of Germany, assignors to Karl Fischer Industrieanlagen GmbH, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 185,189

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1979, 7926583[U]

Int. Cl.[3] D01D *7/00*

U.S. Cl. 425—72 S 5 Claims



1. In a device for spinning endless filaments out of synthetic polymers, said device comprising a plurality of spin positions, each single spin position of it having a spin head with four spinneret holders; a multiple spin pump feeding said holders; a blowing chamber; a spin finish device and a winding device with at least two winding axes, the improvement characterized in that one spinneret at least is in each spinneret holder, and that said spinneret can be fed by one of said spin pumps with at least two dosed melt stream, the quantity of which is designed for spinning a different number of ends per spin position wherein the number of ends produced at each spin position varies by a ratio of 3:2:1.

4,318,677

SMALL VOLUME OUTLET APPARATUS WITH A SIEVE CHANGING DEVICE FOR MULTIPLE SHAFT SCREW MACHINES

Martin Ullrich, Leverkusen, and Heinz Gemperlein, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 21, 1979, Ser. No. 68,354

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1978, 2836847

Int. Cl.[3] B29B *5/00*

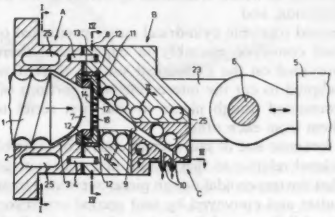
U.S. Cl. 425—183 6 Claims

1. A small volume outlet apparatus with a sieve changing device for multiple screw shaft machines comprising three sections whose mating surfaces have coinciding passage openings therein, and wherein the continuous passageway thus formed is continuously more restrictive, said apparatus comprising

(A) a first section comprising a housing, having a first passage therein, wherein said first passage is adapted to receive one or more multiple screw shafts and wherein said first passage has an inlet end and an outlet end, the cross-sectional area of said outlet end being less than the cross-sectional area of said inlet end;

(B) a second section movable in the axial direction of and connected to said first section by way of a pressure clamping means, said second section comprising a housing having a second passage therein, where said second passage has an inlet end and an outlet end, the inlet end of said second passage being arranged so that it coincides to the outlet of said first passage, wherein the cross-sectional area of the outlet end of said second passage is less than the cross-sectional area of the inlet end of said second passage and wherein the cross-sectional area of the outlet of said second passage is in the shape of a slot;

(C) a third section, rigidly fixed to the said second section, comprising a housing having a third passage therein, wherein said third passage has an inlet end and an outlet end, the inlet of said third passage being arranged so that it coincides with the outlet of said second passage and



having an outlet end in the form of a perforated ridge of one or two rows;

(D) a sieve changing device comprising a cassette and a sieve assembly therein, wherein said cassette and sieve assembly is located in the channel between the mating faces of the first and second sections, wherein said cassette and sieve assembly have substantially the same cross-sectional area and configuration as the outlet of said first section and the inlet of said second section, wherein the cassette and sieve assembly are held in place by the clamping means used to attach the first and second sections together and wherein a moving means is provided to move a clean cassette and sieve assembly into position and remove a contaminated cassette and sieve assembly.

4,318,678

APPARATUS FOR PRODUCING A PLURALITY OF TRAPEZOIDAL DOUGH PIECES OF THE SAME ORIENTATION FROM A WEB OF DOUGH SHEET

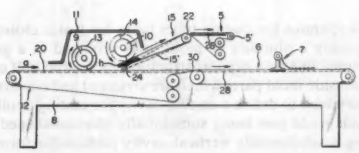
Torahiko Hayashi; Michio Morikawa, and Sadao Shibata, all of Utsunomiya, Japan, assignors to Rheon Automatic Machinery Co., Ltd., Tokyo, Japan

Filed Mar. 10, 1980, Ser. No. 128,940

Claims priority, application Japan, Mar. 8, 1979, 54-27350

Int. Cl.[3] B29C *17/00*; A21C *5/00*

U.S. Cl. 425—301 12 Claims



1. An apparatus for producing from a sheet of dough a plurality of trapezoidal dough pieces having the same orientation, comprising a first conveyor assembly for conveying the dough sheet and having at least one conveyor arranged substantially horizontally,

a first rotatable cylindrical cutter positioned on said first conveyor assembly in engagement therewith, said cutter being provided on the cylindrical surface thereof with

blades adapted to cut from the dough sheet two kinds of lengthwise series of dough pieces, a first series consisting of trapezoidal dough pieces of the same orientation and interconnected head-to-tail and a second series consisting of dough pieces alongside said first series but aligned in reverse orientation and separated from each other,

a second conveyor assembly positioned downstream of said first cylindrical cutter and spaced above said first conveyor assembly by at least the thickness of the dough pieces, said second conveyor assembly comprising at least one conveyor and including a forward portion provided at the foremost end thereof with a surface curved in cross-section and adapted to receive said interconnected dough pieces of said first series, and a rearward portion the upper portion of which is inclined upwardly in the downstream direction, and

a second rotatable cylindrical cutter positioned on said second conveyor assembly in engagement therewith and provided on the cylindrical surface thereof with blades adapted to cut the interconnecting portions of the interconnected dough pieces in said first series to separate them from each other,

the foremost end of said second conveyor assembly being at a level relative to that of said first conveyor assembly so that the trapezoidal dough pieces separated by said second cutter and conveyed by said second conveyor assembly can fall from said foremost end onto said first conveyor assembly in a manner reversing their orientation,

the conveying speeds of the first and the second conveyor assemblies being arranged to be the same at least in the range between an area of the first conveyor assembly engaging the first cutter and an area of the second conveyor assembly engaging the second cutter.

4,318,679

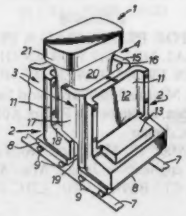
APPARATUS FOR CASTING TOILET TANKS

Bernard C. Moore, Ohain, Belgium, assignor to American Standard Inc., New York, N.Y.

Continuation of Ser. No. 27,563, Apr. 6, 1979, abandoned. This application Jan. 2, 1980, Ser. No. 108,991

Int. Cl.³ B29C *1/00, 1/06, 5/10*

U.S. Cl. 425—348 S **9 Claims**



1. Apparatus for casting toilet tanks for water closet bowls, comprising a plurality of mold units arranged in a generally horizontal line on a support structure, each mold unit comprising two side mold parts which are arranged and constructed to be assembled to define a casting cavity for casting a toilet tank, one side mold part being substantially channel-shaped in plan having a substantially vertical cavity surface for forming the back wall of the tank and the other side mold part being substantially channel-shaped in plan and having substantially vertical cavity surfaces for forming the side walls and front wall of the tank, one of the side mold parts having an integral base for forming the bottom wall of the tank, the side mold parts being adapted to be opened and closed by relative movement in a direction longitudinally of the line of mold units, each side mold part being connected in back-to-back relation to the adjacent side mold part of the next adjacent mold unit in the line.

4,318,680

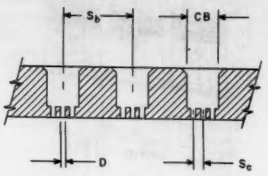
SPINNERETTE PLATE HAVING MULTIPLE CAPILLARIES PER COUNTERBORE FOR MELT SPINNING FUSION MELTS OF ACRYLONITRILE POLYMER AND WATER

Ronald E. Pfeiffer, Pensacola, and Stanley E. Peacher, Milton, both of Fla., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 938,202, Aug. 30, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,999

Int. Cl.³ B29F *3/04*

U.S. Cl. 425—382.2 **5 Claims**



1. A spinnerette plate having a plurality of counterbores and within each counterbore, at least about 3 capillaries, said capillaries being at a density of at least about 18 per square centimeter of plate surface and said counterbores being spaced center to center at a distance of less than about 5 millimeters.

4,318,681

MANUFACTURE OF THERMOPLASTICS PIPE

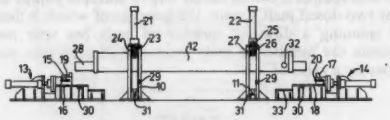
William C. Aston, Halesowen, and Derek Walker, Wakefield, both of England, assignors to IMI Yorkshire Imperial Plastics Limited, Leeds, England

Filed Sep. 10, 1980, Ser. No. 185,925

Claims priority, application United Kingdom, Sep. 15, 1979, 32060/79

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—392 **10 Claims**



1. Apparatus for use in the manufacture of a length of thermoplastics pipe of cylindrical cross-section having a socket at one end by the radial expansion of a thermoplastics pipe blank within a circular cross-section mould, said apparatus comprising a central mould portion substantially cylindrical in shape, said central mould portion being open at its end at which the socket is to be formed on the blank; a mould end portion adapted to engage and close said central mould portion at its open end, said end portion having a mandrel adapted to engage a blank whose end extends from the end of the central mould portion; means for supporting said central mould portion independently of the mould end portion, said supporting means being adapted to lower said central mould portion from a starting position where its longitudinal axis extends vertically above and parallel to the axis of the mandrel in the end portion, to a first predetermined position where the blank lying in the lowermost part of the central mould portion is able to be engaged by the mandrel, and to a second predetermined position below the first predetermined position where the longitudinal axis of the central mould portion coincides with that of the mould end portion and permits the mould end portion to be subsequently closed to the central mould portion; and means for advancing said mould end portion relative to the central mould portion, said advancing means being adapted to hold the

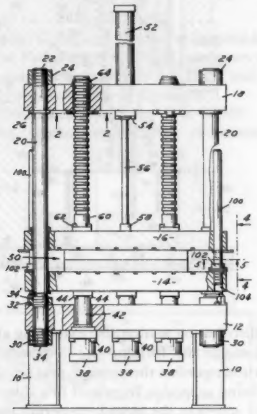
mould end portion in three spaced positions, namely fully withdrawn from the central mould portion, partially advanced towards the central mould portion such that the mandrel engages the blank extending from the end of the central mould portion, with the mould end portion not yet closed to the central mould portion, and fully advanced with the mould end portion fully closed to the central mould portion.

4,318,682

PRESS LOCKING APPARATUS

Frederick R. Larson; Rodger L. Dangremond, both of Holland; Donald L. Reuschel, Hamilton, and James I. Moore, Zeeland, all of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Sep. 5, 1980, Ser. No. 184,519
Int. Cl.³ B30B *15/00*
U.S. Cl. 425—411 **4 Claims**



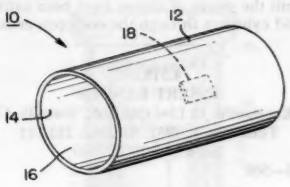
1. A hydraulic press for molding parts having a base support means with a first stationary plate means, a first movable plate, first cylinder means attached to said first movable plate and to said first stationary plate, a second stationary plate means having an inboard and an outboard face, a second movable plate, a second cylinder means attached to said second stationary plate means and to said second movable plate, column means affixed to said first stationary plate means and to said second stationary plate means, said first and second movable plates being guidingly supported by said column means during relative movement therebetween, adjustably positionable locking means operatively co-operating with said second stationary plate and said second movable plate wherein said locking means prevents movement of said first movable plate when the press is subjected to full press loading, said locking means including guide bushing means in said second stationary plate means, rod means affixed to said second movable plate and extends through said bushing means in said second stationary plate means having a plurality of spaced grooves formed therein at spaced increments along the length thereof and parallel to one another and to the inboard and outboard face of said second stationary plate means, adjustable stop means fixedly secured in one of said grooves at the outboard face of said second stationary plate means to limit movement of said first movable plate toward said second movable plate, and retractable locking plate means supported on the inboard face of said second stationary plate means selectively engageable with another of said grooves at the inboard face of said second stationary plate means when said stop means limits movement of said first movable plate whereby press loads produced by said second cylinder means are transferred through said rod means and said second stationary plate means so as to be assumed by said column means.

4,318,683

APPARATUS FOR MOLDING INDICIA IN ROTO-MOLDED PLASTIC CONTAINERS

Warren D. Fishbaugh, Rochester; W. Lawson Batty, Jr., Pittsford, and Frank J. Freedman, Penfield, all of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Division of Ser. No. 912,030, Jun. 2, 1978. This application Apr. 4, 1980, Ser. No. 137,206
Int. Cl.³ B29C *5/04*
U.S. Cl. 425—429 **3 Claims**



1. In an apparatus for roto-molding containers including a hollow mold adapted to receive a charge of the thermoforming resin to be molded, the mold having walls of a heat conducting material for conducting externally applied heat to the resin charge and the mold having at least a portion of the inner surface of a wall substantially smooth and unadorned, means for applying heat to the exterior of the mold and means supporting the mold for rotation about two axes during the heating thereof, the improvement comprising:

(a) a flexible template of silicone rubber having a substantially smooth base surface for attachment directly to said smooth portion of said mold wall inner surface, a top surface of said template being formed with a mirror image of indicia to be molded into a wall of the roto-molded container; and

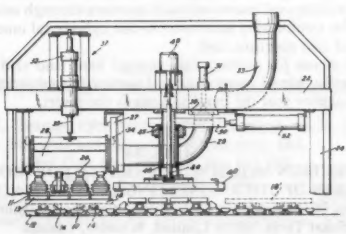
(b) a heat resistant strippable silicone compound adhesive between said template base and said mold wall for attaching said template to said mold.

4,318,684

METHOD AND INSTALLATION FOR STRIPPING A PIECE OF SOFT CHEESE FROM A MOLD

Michel Boucher, Surgeres, France, assignor to Cartier S.A., Surgeres, France

Filed Jan. 29, 1981, Ser. No. 229,457
Claims priority, application France, Feb. 4, 1980, 80 02341
Int. Cl.³ B29C *7/00*; A10J *25/08*
U.S. Cl. 425—437 **9 Claims**



1. An installation for removing a piece of soft cheese formed in a mold constituted by a vertical cylinder open at both ends and resting on a plate with one of the open ends, which comprises

(a) a group of said mold cylinders,

(b) a suction cup connectable to a source of vacuum and

mounted above the other open end of each mold cylinder for holding the piece of cheese,

(c) a clamping means arranged to hold the mold cylinders tightly,

(d) a first means for vertically displacing the suction cups,

(e) a second means for vertically displacing the clamping means, and

(f) control means for synchronously operating the first and second displacing means for first simultaneously lifting the mold cylinders and the pieces of cheese therein and then displacing the pieces of cheese relative to the mold cylinders until the pieces of cheese have been extracted from the mold cylinders through the one open ends.

4,318,685

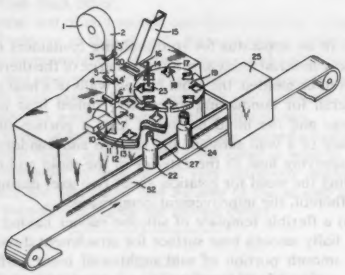
INSERT BANDER

Anatole E. Konstantin, 10 Live Oak Rd., Norwalk, Conn. 06851

Filed Jan. 5, 1981, Ser. No. 222,711

Int. Cl.³ B29C *27/30*

U.S. Cl. 425—508 **3 Claims**



1. Apparatus for removably attaching inserts to articles by means of shrinkable plastic bands, comprising in combination:

(1) means for feeding an opened band of shrinkable plastic film into vertical alignment with an article banding station,

(2) means for (a) shaping an insert into a generally cylindrical form, such that the diameter of said cylindrically shaped insert is less than the diameter of said opened plastic band but larger than the portion of said article over which the insert is to be placed, and (b) feeding said cylindrically shaped insert into vertical alignment with said opened band at said article banding station, said means comprising: (i) a movable plate provided with at least one cylindrical aperture extending through said plate, said aperture communicating on its peripheral side with a slot extending to the edge of said plate and (b) means for feeding said inserts into said aperture through said slot and for conforming said insert to the cylindrical inner surface of said aperture, and

(3) means for pushing said opened band and said cylindrically shaped insert over said portion of said article in such manner that the band surrounds the insert.

4,318,686

INJECTION MOLDING APPARATUS FOR MOLDING PARTS OF THERMOSETTING PLASTIC MATERIAL

Dennis W. Morgan, St. Clair Beach, Canada, assignor to International Tools (1973) Limited, Windsor, Canada

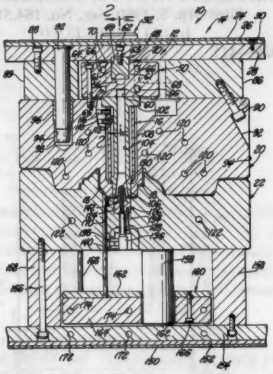
Filed Jan. 3, 1980, Ser. No. 109,362

Int. Cl.³ B29F *1/08*

U.S. Cl. 425—543 **13 Claims**

1. In an injection molding apparatus for molding parts of thermosetting plastic material: a first mold portion having a molding surface to form one-half of a mold cavity, a second mold portion having a second molding surface to form a second, complementary half of the mold cavity; a fluid distribution member having an inlet port having a restricted opening formed at one surface to receive the plastic material in a viscous state, at least one outlet port formed at another surface thereof and communicating with the mold cavity to release the plastic material in a viscous state and a passage interconnecting the inlet port with the outlet port to conduct the flow of plastic material, said fluid distribution member adapted to be cooled to prevent the fluid plastic material from setting therein, wherein the improvement comprises:

said fluid distribution member including a first distribution section extending along the length of the passage and defining a first wall portion of the passage and a separable



second distribution section also extending along the length of the passage and forming the complement of the first wall portion to define the passage. said second distribution section being separable from said first distribution section to permit access to the passage to permit cleaning thereof, and securing means for releasably securing said first and second distribution sections together and wherein said second distribution section has a channel formed at its upper surface and wherein said first distribution section is disposed within said channel, the interconnecting passage being formed by the first and second wall portions within said channel.

4,318,687

GAS BURNER CONTROL SYSTEM

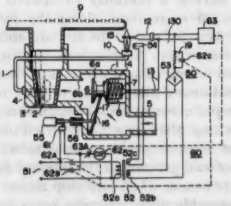
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Dec. 28, 1978, Ser. No. 974,083

Claims priority, application Japan, Dec. 28, 1977, 52-159415; Jan. 10, 1978, 53-1663; Jan. 17, 1978, 53-3573; Apr. 24, 1978, 53-48555; Apr. 24, 1978, 53-48556; Apr. 28, 1978, 53-52070

Int. Cl.³ F23Q *9/08*

U.S. Cl. 431—54 **29 Claims**



1. In a valve control system having a thermocouple located,

in use of the system, in the proximity of a pilot flame for gas burner for producing a thermoelectromotive force in response to said pilot flame, an electromagnetic valve controllable for opening and closing a gas supply duct for supplying gas to said burner, a solenoid associated with said electromagnetic valve and connectable in circuit with said thermocouple for energization by said thermoelectromotive force whereby to actuate said electromagnetic valve, the improvement which comprises a resistance and connecting means for connecting said thermocouple, said solenoid and said resistance in series to form a closed series circuit.

4,318,688

OIL BURNER

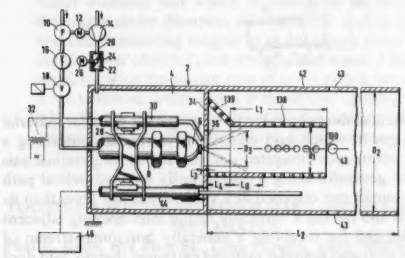
Winfried Buschulte, Celle, and Friedhelm Dageforde, Munster-Trauen, both of Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V., Linder Hohe, Fed. Rep. of Germany

Filed Aug. 29, 1979, Ser. No. 70,794

Claims priority, application Fed. Rep. of Germany, May 8, 1979, 2918416

Int. Cl.³ F23D *11/40*

U.S. Cl. 431—114 **8 Claims**



1. An oil burner, comprising a chamber, an oil atomizing device supported in said chamber, an air supply duct connected to said chamber for delivering air to said chamber, a wall located in said chamber transversely to the axis thereof and positioned downstream of said atomizing device, said wall having at least one aperture formed therein through which oil from said atomizing device and air are discharged from said chamber, a substantially cylindrical flame tube joined to said wall and extending in an upstream direction therefrom, a mixing tube positioned coaxially within said flame tube downstream from and coaxial with the aperture in said wall, the portion of said mixing tube adjacent to the downstream end thereof being perforated and the portion of said mixing tube adjacent the upstream end thereof being imperforate, the imperforate portion of said mixing tube having an axial length that is more than $\frac{1}{3}$ but that is less than $\frac{2}{3}$ of the diameter of said mixing tube, said flame tube having a length that is at least twice the diameter thereof and a diameter between substantially 2.0 and 2.5 times the diameter of said mixing tube, and at least one passage being located adjacent to said wall and extending between the annular space between said flame tube and said mixing tube and the interior of said mixing tube, the upstream end of said mixing tube being spaced from said transverse wall to define said passage, said passage providing for recirculation of the combustion gases, and said perforations in said mixing tube enabling gases in said mixing tube to expand radially, whereby noises due to pressure variations in said flame tube are reduced.

4,318,689

BURNER FOR LIQUID FUELS

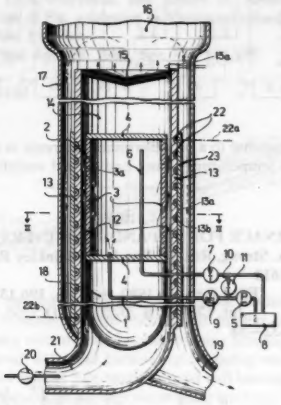
Siegfried Förster, Alsdorf, and Berthold Sack, Aachen, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Filed Mar. 28, 1980, Ser. No. 135,083

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912519

Int. Cl.³ F23D *11/44*; F24H *3/00*

U.S. Cl. 431—208 **6 Claims**



1. A burner for liquid fuels comprising:

a closed chamber formed with at least one liquid-fuel-permeable porous wall;

fuel-feed means connected to said chamber for feeding liquid fuel under pressure thereto whereby the liquid fuel penetrates said wall and forms a liquid film on an external surface thereof;

a first duct surrounding said chamber and defining a combustion-air passage therewith;

means for feeding combustion air through said passage and along said porous wall in contact with said liquid film; and

a second duct spacedly surrounding said first duct for conducting a hot combustion gas along said first duct for indirect heat exchange for preheating of said combustion air to a temperature sufficient to enable said combustion air to vaporize said film whereby a mixture of fuel vapor and air is formed downstream of said first duct and said chamber and burns to form the hot combustion gases.

4,318,690

VENTING PROCESS FOR ORGANIC HEAT TRANSFER MEDIA

William J. Duncan, Chattanooga, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

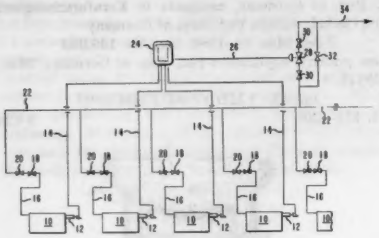
Filed Oct. 16, 1980, Ser. No. 197,753

Int. Cl.³ F27D *19/00, 23/02*

U.S. Cl. 432—41 **8 Claims**

1. An improved process for periodically removing noncondensable impurities from a closed pressurized heat transfer system of the type which employs a condensable organic vapor to heat a plurality of process vessels to substantially the same temperature by venting from said system a portion of said vapor along with contained noncondensable impurities from the top of each heated vessel whereby each vessel's operating temperature is maintained within prescribed limits wherein the improvement comprises monitoring the operating temperature

at the top of each vessel and intermittently venting vapor from all vessels simultaneously through a valve regulated automatically in response to a predetermined decrease in the monitored operating temperature at any one of said vessels.

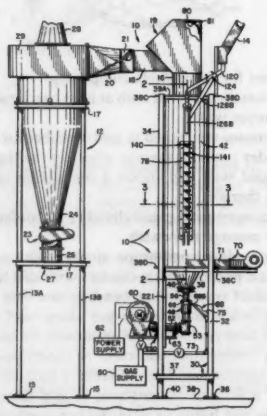


4,318,691

FURNACE FOR EXPANDING MINERAL ORES

William A. Strong, Rte. 11, Box 1150, Brinkley Rd., Pine Bluff, Ark. 71611

Filed Oct. 10, 1980, Ser. No. 196,135
Int. Cl.³ F27B *15/00*; F27D *1/08*
U.S. Cl. 432—58 **38 Claims**



1. A vertically upright furnace for processing heat expandable ore such as perlite, vermiculite or the like, the furnace comprising:

a rigid, upright frame adapted to be disposed upon a supporting surface;

an elongated furnace tube adapted to be supported by said frame, the furnace tube including an upper product output orifice and a lower, reduced diameter heat input orifice;

means for preheating a raw ore and inputting preheated ore into said furnace tube for expansion, the preheating means including:

an elongated preheating enclosure secured to said furnace in heat exchange relation with respect to said furnace tube; and,

a plurality of heat conducting baffles for contacting and warming raw ore, the baffles adapted to be removably coupled within said enclosure in vertically spaced-apart, generally inclined relation therewithin;

means for injecting a stream of hot gas into said furnace tube to heat and thereby expand ore therewithin; and,

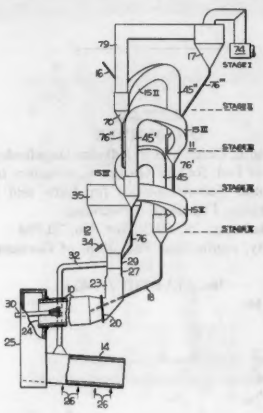
means for selectively bypassing said raw ore preheating means to permit use of said furnace with ores of varying types.

4,318,692

HELICAL DUCT GAS/MEAL SEPARATOR

Paul D. Hess, Brookfield, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jan. 2, 1981, Ser. No. 222,034
Int. Cl.³ F27B *15/00*, *7/02*
U.S. Cl. 432—58 **13 Claims**



1. A helical duct separator for segregating granular material from a gas in which said material is entrained comprising a hollow continuous elongated duct having its longitudinal axis disposed generally along a downwardly inclined helical path with its outlet end disposed at a vertically lower level than its inlet end and having a vertically facing inlet opening adjacent said inlet end for receiving a generally horizontal stream of said gas with said granular material entrained therein, said duct also having means including a downwardly inclined upper wall portion and a concave outer sidewall portion for deflecting said gas stream and entrained granular material into a downwardly inclined helical path within said duct, said duct also having a bottom wall portion in the path of said helically downward directed gas stream, a granular material exit opening in said bottom wall portion adjacent said outlet end, and a gas exhaust opening adjacent said outlet end at a level vertically above said meal exit opening, said bottom wall portion deflecting said gas stream upward toward said gas exhaust opening and said granular material being precipitated from said gas stream and flowing under centrifugal and inertial forces along said bottom wall portion and through said material exit opening.

4,318,693

AXIAL FAN TURNING DIFFUSER

Howard L. Gutzwiller, Zelienople, Pa., assignor to Robinson Industries, Inc., Zelienople, Pa.

Filed Nov. 20, 1980, Ser. No. 208,590
Int. Cl.³ F27B *5/16*
U.S. Cl. 432—201 **8 Claims**

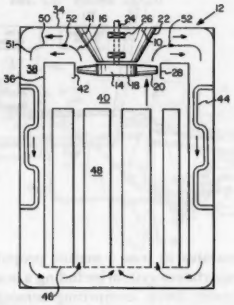
1. An axial flow fan plug unit and heat treating furnace combination comprising:

A. an outer furnace wall having an opening therethrough;

B. an inner shroud having an opening therethrough defining a multi-sided outer chamber with the furnace wall and an inner chamber internal of the shroud for accommodating articles to be heat treated;

C. heating units positioned in the outer chamber;

D. a frustoconical shaped housing extending through the furnace wall opening to the inner shroud opening;
E. a driver shaft extending coaxial of the housing;
F. a tankhead connected to the end of the shaft;
G. a plurality of blades extending radially outward from the tankhead within the area of the inner shroud opening; and
H. a bugle bell shaped deflector having a wall deflector positioned concentrically about the housing wherein the deflector wall is defined by a radius of curvature which



initiates at a first end adjacent the blades and defining a minor diameter and which terminates at a second end defining a major diameter, said deflector wall at the second end terminating tangent to an imaginary plane bisecting the outer chamber, and wherein said minor diameter is equal to twice the square root of $(r_1^2+r_3^2)/2$, wherein r_1 is the tankhead radius and r_3 is the shroud opening radius, whereby the air curtain formed by the rotating blades is reduced and the effeciency of the fan is increased.

4,318,694

TOOTH-TO-TOOTH RETAINER WIRE INSTALLATION APPARATUS

Paul E. Klein, 601 First St., Lake Oswego, Oreg. 97034

Filed Nov. 20, 1980, Ser. No. 208,798
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—22 **8 Claims**

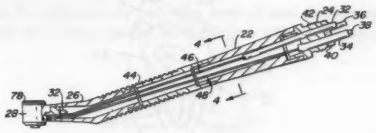
1. A unitary elasticized stabilizer for immobilizing temporarily a tooth-to-tooth retainer wire or the like during its installation, said stabilizer comprising
an elongated filament portion sized to fit and extend between a pair of adjacent teeth,
an eyelet formed adjacent one end of said filament portion for receiving and engaging such a wire and, through stretching of the filament portion, for urging the wire toward one side of such teeth, and
reaction means joined adjacent the other end of said filament portion for acting against the opposite side of such teeth to inhibit withdrawal of the filament portion in a direction toward the one side of the teeth.

4,318,695

HANDPIECE

Nathaniel H. Lieb, Narberth, and Albert D. Alderman, Jr., Skippack, both of Pa., assignors to Venture Technology, Inc., Conshohocken, Pa.

Filed Apr. 28, 1980, Ser. No. 144,107
Int. Cl.³ A61C *1/05*
U.S. Cl. 433—132 **11 Claims**



1. A dental handpiece comprising a tubular housing, a turbine housing mounted at one end of said tubular housing, a turbine rotatably mounted within said turbine housing, bearing means associated with said turbine, said bearing means comprising a pair of spaced ball bearings, said ball bearings having inner and outer races, said outer races being stationary and said inner races being adapted to rotated with said turbine, means to isolate each of said outer races from said turbine housing, means for resiliently mounting said outer races in said isolator means, means for resiliently mounting said isolator means in said turbine housing, and means for securing a dental bur within said turbine.

4,318,696

IMPLANT ARTIFICIAL DENTURE

Katsumi Kasama, and Toru Kasama, both of 2-3, Minamirinkan 2-chome, Yamato-shi, Kanagawa-ken, Japan

Filed Dec. 10, 1979, Ser. No. 101,856
Claims priority, application Japan, Dec. 14, 1978, 53/15373; Apr. 26, 1979, 54/50929; Jun. 16, 1979, 54/75176
Int. Cl.³ A61C *8/00*
U.S. Cl. 433—173 **30 Claims**

1. An implant artificial denture, comprising:
an intra-ossal implant for implantation in a jaw, said implant having a head with an axially outer tip integral therewith;
an elastic material fitted over substantially all of said head; and
a prosthetic tooth crown fitted directly over the elastic material but only indirectly over said head due to the presence of said elastic material therebetween;
said elastic material including a contacting surface shaped to conform with said prosthetic tooth crown and to adhere said elastic material to said prosthetic tooth crown;
said elastic material being constituted by a construction

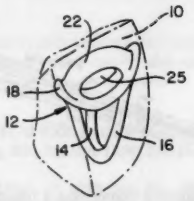
which is of progressively lower elasticity outwards through the thickness thereof such that said elastic material has a relatively higher coefficient of elasticity distally of said contacting surface and relatively lower coefficient of elasticity proximally of said contacting surface.

4,318,697

DENTAL RESTORATIVE ANTERIOR STRUCTURE

Itzhak Shoher, 50 Shlomo Hamelech St., Tel Aviv, and Aharon E. Whiteman, 13 J1 Perez St., Petach Tikvah, both of Israel

Continuation-in-part of Ser. No. 8,944, Feb. 2, 1979. This application Jul. 11, 1980, Ser. No. 167,712
Int. Cl.³ A61C *13/08*
U.S. Cl. 433—208 **7 Claims**



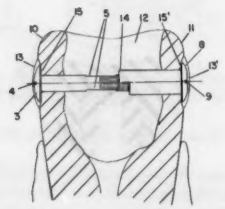
1. A dental restoration comprising an anterior pontic having a porcelain superstructure surrounding a metal framework composed of an integral assembly of metal rod-like members extending gingivally from a relatively curved metal member extending mesial-distally within the restoration and further including an upright member extending rearward the incisal edge of said restoration with an opening for providing a pocket of porcelain between the upright member and the relatively curved metal member.

4,318,698

DEVICE FOR STABILIZING A TOOTH AND A METHOD FOR ITS USE

Haim Korach, 11 Epstein Rd., Tel-Aviv, Israel

Filed Jan. 21, 1980, Ser. No. 113,962
Claims priority, application Israel, Jun. 14, 1979, 57566
Int. Cl.³ A61C *5/04*
U.S. Cl. 433—225 **6 Claims**



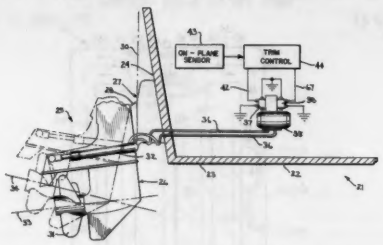
1. A device for the stabilization of a tooth, in particular a molar tooth, having a cavity, which comprises a screw provided with an outer thread on one end thereof and a means at its end opposite said thread for holding said screw and a hollow nut provided with an inner thread at one end adapted to fit the outer thread of said screw and a means at the opposite end thereof for holding said nut, said nut having a tongue-like extension at the thread end thereof which enhances the locking effect of said nut, and said screw having two partially flat outer surfaces which further enhance the mechanical locking of said device.

4,318,699

TRIM CONTROL

Thomas D. Wenstadt, Oshkosh, and Cary J. Chmielewski, North Fond du Lac, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Dec. 14, 1979, Ser. No. 103,454
Int. Cl.³ B63H *5/12, 21/26*
U.S. Cl. 440—1 **28 Claims**



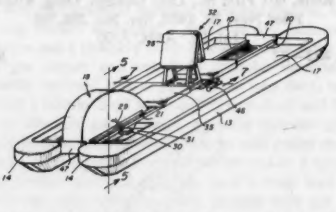
1. An apparatus to trim a marine propulsion unit within a marine transportation system including a boat having an engine and a trimmable drive, comprising sensing means operating independently of the attitude of said boat to monitor the operation of said marine transportation system to provide an output distinguishing a boat operation in an off-plane condition and a boat operation in an on-plane condition, and drive trimming means operable by said sensing means to position said drive at a desired trim position in response to said sensing means output.

4,318,700

PADDLE WHEEL OPERATED WATERCRAFT

Charles D. Price, 78 Sylvan Rd., South Windham, Me. 04082

Filed Apr. 9, 1980, Ser. No. 138,591
Int. Cl.³ B63H *16/12*
U.S. Cl. 440—26 **8 Claims**



1. A watercraft including a pair of pontoons of an expanded plastic, a frame including a series of transverse members the ends of which extend into the proximate sides of the pontoons and are incorporated therein and include anchor members embedded in the pontoons and extending lengthwise thereof, said transverse and anchor members holding said pontoons in a parallel, spaced apart relationship, and a pair of lengthwise, spaced apart members connected to said transverse members, each extending along the upper edge of the inner side of the appropriate one of said pontoons, a propelling unit including a paddle wheel provided with a shaft and a pedal connected to each shaft end and a shield overlying said paddle wheel with the pedals exposed at the sides thereof, said unit attached to the fore end of the lengthwise frame members with the paddle wheel between said pontoons, a rudder pivotally supported by the aft end of said frame, a seating means supported by an intermediate part of said lengthwise frame members in a position enabling the feet of a seated person to engage and operate said pedals, the unit sufficiently narrow to enable it to be straddled by the legs of a person seated on said seating means, and

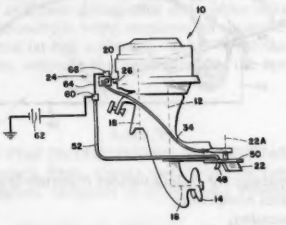
manually operated steering means connected to and operable to turn said rudder, said means extending forward into a position laterally of and adjacent said seating means.

4,318,701

POWER STEERING SYSTEM FOR BOATS

Creal E. Kirkwood, Rte. 1, Box 353C, Wagoner, Okla. 74467, and Ted O. Dunagan, P.O. Box 157, Lancaster, Tex. 75146

Filed May 27, 1980, Ser. No. 153,597
Int. Cl.[3] B63H *21/26*
U.S. Cl. 440—51 13 Claims



1. A power steering system for outboard motors or inboard/outboard power units, comprising:

a motor assembly having a power shaft and gears driving a propeller mounted on a horizontal rearward extending shaft, the motor assembly adapted for rotation about a hinge means having a generally vertical axis, the axis of rotation being on the side of the motor assembly opposite to that of the propeller, the hinge means being adapted to be secured to the stern of a boat;

at least one control rudder means mounted on a vertical axis on said motor assembly aft of said propeller and positioned in the slip stream of the propeller;

a steering assembly with said boat providing a steering member which is laterally displaced in a horizontal plane adjacent said motor assembly and forwardly of said vertical axis of rotation of said motor assembly, the steering member being positioned in response to manually applied steering control;

a control rudder steering means extending from said control rudder to said steering member whereby when said steering member is laterally displaced said control rudder is displaced about its axis whereby the force of the slip stream will apply torque to said motor assembly to rotate said motor assembly and thereby apply steering force to said motor assembly;

a lockable slip means between said steering member and said motor assembly wherein in the locked condition said steering member is secured to the motor assembly and in the unlocked condition a preselected amount of slip is provided between said steering member and said motor assembly;

means for detecting the speed of the boat forward movement;

means to actuate said lockable slip means responsive to said speed detecting means to lock said steering member to said motor assembly when the detected forward speed of the boat is below a preselected rate.

4,318,702

SHIFTING MECHANISM FOR OUTBOARD MOTORS

John C. Stacey, 109 Elm St., Stonington, Conn. 06378

Filed Jan. 11, 1980, Ser. No. 111,247
Int. Cl.[3] F16D *23/02*
U.S. Cl. 440—75 1 Claim

1. A drive mechanism for an outboard motor utilizing shifting apparatus comprising:

a drive shaft rotatable about a first axis;

a pinion fixed on said drive shaft for rotation therewith;

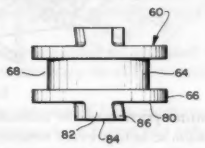
a propeller shaft rotatable about a second axis transverse to said first axis;

a propeller fixed at one end of said propeller shaft for rotation therewith;

a bevel gear drivingly engaged with said pinion being freely rotatable on said propeller shaft and including a first surface which lies generally in a plane perpendicular to said second axis;

a shifter splined to said propeller shaft for rotation therewith and being selectively movable axially thereon between an operative position drivingly connecting said drive shaft and said propeller shaft and a neutral position in which said drive shaft and said propeller shaft are disconnected and including a second surface which lies generally in a plane perpendicular to said second axis and which faces said first surface; and

means for substantially reducing wear of said shifting apparatus including a pair of lands integral with said bevel gear



extending axially outwardly from said first surface at diametrically opposite locations equally distant from said second axis and having extreme outer surfaces lying generally in a plane parallel to and spaced from said first surface and having lateral surfaces lying generally in planes transverse to said first surface and said outer surfaces of said lands and a pair of dogs integral with said shifter extending axially outwardly from said second surface at diametrically opposite locations equally distant from said second axis and having extreme outer surfaces lying generally in a plane parallel to and spaced from said second surface and having lateral surfaces lying generally in planes transverse to said second surfaces and said outer surfaces of said dogs, said lateral surfaces of said dogs being engageable with said lateral surfaces of said lands, said mutually engageable lateral surfaces of said lands and of said dogs, respectively, lying generally in planes which form a predetermined acute angle relative to said second axis.

4,318,703

METHOD FOR PRODUCING CONTAINERS

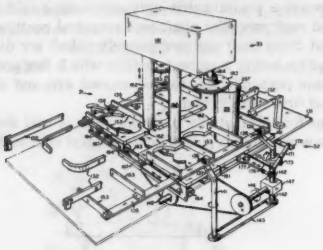
Frank P. Richards, Prairie Village, Kans., and Raymond C. Taylor, Grandview, Mo., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 853,651, Nov. 21, 1977, Pat. No. 4,204,462, which is a division of Ser. No. 630,555, Nov. 10, 1975, Pat. No. 4,072,226. This application Dec. 31, 1979, Ser. No. 108,317
Int. Cl.[3] B31B *1/74*
U.S. Cl. 493—149 15 Claims

1. A method for finishing a container, said method comprising:

successively advancing individual containers of a series of open-topped containers to a container finishing station by supporting said container on a generally horizontal container supporting surface with the open tops thereof opening inwardly and contacting each successive container with one of a plurality of parallel, substantially equally spaced, generally coplanar arm members; simultaneously moving each point on each of said arm members through a path defining an arc of a circle which is generally coplanar with said arm members to advance the thus contacted

containers along said container supporting surface to a position at which continuing arcuate movement will withdraw said arm members from contact with the containers being moved thereby; continuing said arcuate movement of said arm members to complete the circle and bring each said arm member into contact with a succeeding container; and repeating the motion of said arm members to continue incremental advancement of said containers along said container supporting surface;



gripping a bottom portion of the container located at said finishing station so as to prevent rotation of said container;

finishing the thus gripped container by altering the configuration of the open container top while said bottom portion is so gripped;

releasing said bottom portion upon completion of the finishing of said container; and

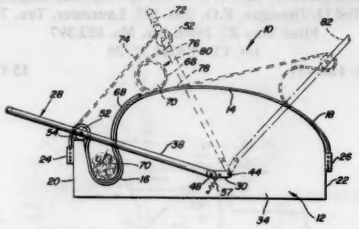
removing the thus released container from said finishing station.

4,318,704

LOG ROLLING APPARATUS

Earl J. Neiss, 620 S. Eckard Rd., Dalton, Ohio 44618

Filed Nov. 26, 1980, Ser. No. 210,581
Int. Cl.[3] B31C *1/00*
U.S. Cl. 493—307 8 Claims



1. An apparatus for rolling various materials into log shapes, said apparatus comprising:

a body member;

well means positioned in said body member for receiving said materials therein;

flexible cover means positioned over said body member and said well means, said cover means being fixedly secured at edges thereof to said body member; and

rotation means pivotally attached to said body member and being operable to cause a translational movement of said flexible cover means across said body member, whereby opposed portions of a top surface of said cover means slidably move in opposite directions relative to one another to effect a rolling of said materials into a log shape.

4,318,705

PROCESS FOR IMPROVING THE LIGHTFASTNESS OF CONVENTIONALLY DYED LEATHER

Rudolf Nowak, Krefeld; Kurt Dahmen, Monchen-Gladbach, and Dolf Stockhausen, Krefeld, all of Fed. Rep. of Germany, assignors to Chemische Fabrik, Cologne, Fed. Rep. of Germany

Filed Sep. 6, 1979, Ser. No. 73,172

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1978, 2839129

Int. Cl.[3] **D06P** *3/32*

U.S. Cl. 8—436 **9 Claims**

1. In the dyeing of leather, the improvement which comprises treating the leather before, during or after fatting with at least one of an alkane sulfonamide and a chloroalkane sulfonamide, the sulfonamide being employed in about 0.5 to 40% by weight of total fat and in about 0.1 to 8% of the shaved weight of the leather, whereby the lightfastness of the dyed leather is improved.

4,318,706

PROCESS FOR DETERMINING MALONDIALDEHYDE

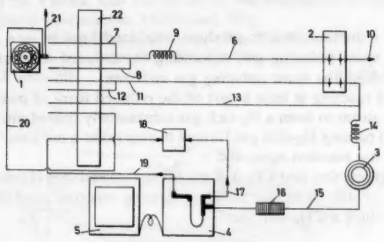
Romeo Roncucci, Paris, France, and Jacqueline Lansen, Anderlecht, Belgium, assignors to Continental Pharma, Brussels, Belgium

Filed Oct. 26, 1979, Ser. No. 88,726

Claims priority, application Luxembourg, Oct. 27, 1978, 80437

Int. Cl.[3] **G01N** *33/52*

U.S. Cl. 23—230 B **5 Claims**



1. A process for determining the content of malondialdehyde in a sample which comprises:

preparing a series of samples containing malondialdehyde;

segmenting the samples using a gas;

adding an acid to the samples to precipitate proteins contained in the samples;

subjecting the samples to dialysis to separate the proteins;

taking up the malondialdehyde with a counter-dialysis bubbled flow;

adding a 2-thiobarbituric acid solution to the counter-dialysis flow;

incubating said flow containing the 2-thiobarbituric acid solution for about 10 minutes at about 82° C. so as to build up a pink-coloured complex between the malondialdehyde and the 2-thiobarbituric acid; and

determining the malondialdehyde content by colorimetry.

4,318,707

MACROMOLECULAR FLUORESCENT QUENCHER PARTICLE IN SPECIFIC RECEPTOR ASSAYS

David J. Litman, Cupertino, Calif.; Zvi Harel, Haifa, Israel, and Edwin F. Ullman, Atherton, Calif., assignors to Syva Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 964,099, Nov. 24, 1978. This application Jun. 3, 1980, Ser. No. 156,160

Int. Cl.[3] **G01N** *33/54, 33/58, 21/76*

U.S. Cl. 23—230 B **8 Claims**

1. An assay method for determining the presence in a sample of an analyte which is a mip, wherein said mip is a member of a specific binding pair consisting of ligand and its homologous antiligand;

said method employing:

(a) a continuous aqueous medium;

(b) a particle conjugate comprising a mip bound to a light absorbing particle;

(c) a signal label conjugate, comprising a signal label conjugated to a mip, wherein said signal label is a fluorescer of chemiluminescer;

wherein the amount of signal label conjugate bound to said particle conjugate is related to the amount of analyte in said aqueous medium;

said method comprising:

combining in an aqueous medium,

(a) said sample;

(b) said particle conjugate substantially uniformly dispersed in said medium;

(c) said signal label conjugate;

(d) the homologous member of said specific binding pair, where the analyte, particle conjugate, and signal label conjugate are the same member of said specific binding pair; and

(e) when the label is excited by chemical activation, additional reagents necessary for the production of chemiluminescence; and

determining the amount of light emission from said assay medium containing both bound and unbound signal label conjugate as compared to an assay medium having a known amount of analyte.

4,318,708

METHOD OF INVESTIGATION OR CONTROL OF CATALYSTS OR CATALYST REACTIONS

Anders T. V. Högberg, Gothenburg, Sweden, assignor to AB Volvo, Gothenburg, Sweden

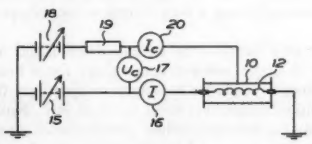
Continuation of Ser. No. 47,711, Apr. 23, 1979, abandoned, which matured from PCT No. PCT/SE78/00034, filed Aug. 22, 1978, 102(e) date Apr. 23, 1979, abandoned.

This application Jun. 10, 1980, Ser. No. 158,075

Claims priority, application Sweden, Aug. 23, 1977, 7709446

Int. Cl.[3] **G05D** *21/02;* **F01N** *3/15;* **B01D** *53/34*

U.S. Cl. 23—230 R **3 Claims**



1. A method for determining the properties of a catalyst with respect to the catalysis of a reaction involving at least one gaseous substance comprising the steps of:

arranging an electrode comprising a catalyst material and another electrode, said electrodes being spaced apart from one another, in a gaseous atmosphere containing said gaseous substance;

applying an electric field between said electrodes;

measuring the positive or negative corona current arising between said electrodes; and

measuring the reaction ratio of said gaseous substance, said measuring steps generating data indicative of the properties of said catalyst.

4,318,709

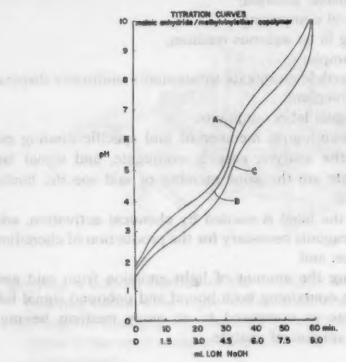
TEST MEANS, TEST DEVICE AND METHOD FOR DETERMINING THE IONIC STRENGTH OR SPECIFIC GRAVITY OF A LIQUID SAMPLE

Richard D. Falb, Bristol, Ind.; Sisto N. Stiso, San Jose, Calif.; Yung-Chyung Wang, Kaohsiung, Taiwan; William I. White, Elkhart, and Rodric H. White-Stevens, Howe, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 958,630, Nov. 8, 1979, abandoned. This application Jul. 10, 1980, Ser. No. 168,466

Int. Cl.[3] **G01N** *9/36, 31/04, 31/22, 33/52*

U.S. Cl. 23—230 R **25 Claims**



1. A test means for determining the ionic strength or specific gravity of an aqueous test sample, said test means comprising a weakly acidic or weakly basic polyelectrolyte polymer, said polymer being at least about 50 percent neutralized, and indicator means capable of producing a detectable response to ion exchange between said polyelectrolyte and said sample.

4,318,710

CONVERSION OF CELLULOSE INTO CHARCOAL

Mark Pilipski, 89 Mountainside Ter., Clifton, N.J. 07013, assignor to Martin F. Sturman, Melrose Park, Pa.; Michael Ebert, Mamaroneck, N.Y. and Mark Pilipski, Clifton, N.J.

Continuation-in-part of Ser. No. 62,980, Aug. 2, 1979, Pat. No. 4,260,685. This application Dec. 28, 1979, Ser. No. 108,057

Int. Cl.[3] **C10L** *5/40, 5/02*

U.S. Cl. 44—1 F **7 Claims**

1. A technique for converting raw stock that is rich in cellulose to charcoal having a high caloric value, comprising the steps of:

A. subjecting the stock to an anhydrous liquid hydrogen halide at about ambient temperature for a time period extending beyond that necessary to hydrolyze the cellulose and sufficient to convert the stock into charcoal; and

B. purging the hydrogen halide from the resultant charcoal.

3. A technique as set forth in claim **1** wherein the anhydrous liquid hydrogen halide is hydrogen chloride.

7. A technique as set forth in claim **1** further including the step of briquetting the charcoal for ease of transportation.

4,318,711

CONVERTING LOW BTU GAS TO HIGH BTU GAS

Robert H. Smith, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 28, 1979, Ser. No. 108,102

Int. Cl.[3] **C10K** *3/04*

U.S. Cl. 48—197 R **2 Claims**

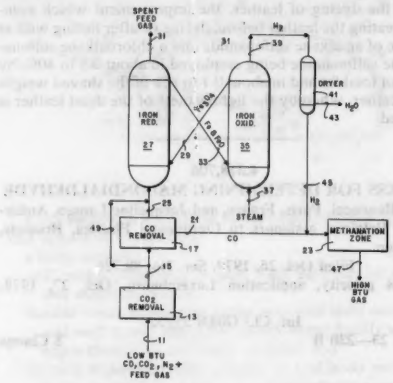
1. A process for producing a higher BTU gas from a lower BTU feed gas comprised of H_2, CO and N_2, said process comprising:

(a) dividing said feed gas into a first feed gas stream and a second feed gas stream;

(b) removing CO from said second feed gas stream to produce a CO-rich gas substantially free of hydrogen and nitrogen and an effluent gas containing nitrogen and hydrogen;

(c) passing CO-rich gas produced in step (b) to a methane forming reaction zone;

(d) passing said first feed gas stream and said effluent gas produced in step (b) as reducing gas through an iron oxide



reduction zone to produce a reduced form of iron and a spent reducing gas, separating the reduced form of iron from the spent reducing gas and then;

(e) reacting at least a part of the reduced form of iron with steam to form a H_2-rich gas substantially free of nitrogen;

(f) passing H_2-rich gas formed in step (e) to a methane forming reaction zone, and

(g) reacting said CO-rich gas of step (c) and said H_2-rich gas of step (f) in said methand forming reaction zone to produce a CH_4-rich gas.

4,318,712

CATALYTIC COAL GASIFICATION PROCESS

Robert J. Lang, Baytown, and Joanne K. Pabst, Crosby, both of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 93,784, Nov. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 925,664, Jul. 17, 1978, abandoned. This application May 19, 1980, Ser. No. 151,007

Int. Cl.[3] **C10J** *3/54*

U.S. Cl. 48—202 **16 Claims**

1. A process for the catalytic steam gasification of coal which comprises:

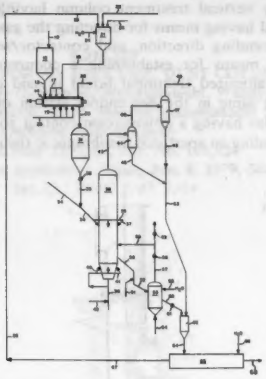
(a) introducing said coal into a reaction zone;

(b) introducing potassium sulfate into said reaction zone;

(c) introducing into said reaction zone in a sufficient quantity to activate said potassium sulfate a sodium or lithium compound selected from the group consisting of sodium sulfate, sodium carbonate, sodium chloride, sodium nitrate, and lithium sulfate; and

(d) gasifying said coal with steam in said reaction zone at a temperature between about 1200° F. and about 1400° F. thereby obtaining a gasification rate that is substantially greater than the weighted average of the separate gasification rates obtained by introducing only said potassium sulfate into said reaction zone and by introducing only said sodium or said lithium compound into said reaction zone, wherein said weighted average is based upon the

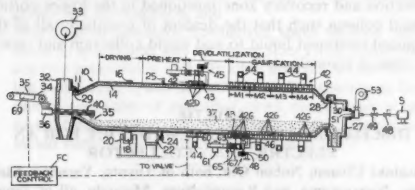
concentration of said potassium sulfate and said sodium or said lithium compounds expressed respectively in potassium-to-carbon and sodium-to-carbon or lithium-to-carbon atomic ratios.



4,318,713
METHOD FOR GASIFYING CELLULOSIC MATERIAL

George T. Lee, West Allis; John N. Lees, Jr., Wauwatosa, and Paul M. Pukita, Elm Grove, all of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 1, 1980, Ser. No. 192,894
Int. Cl.[3] C10J *3/00*
U.S. Cl. 48—203 15 Claims



1. The method of gasifying cellulosic material in a rotary kiln having drying, devolatilization and gasifying zones of successively increasing temperature from the intake end to the discharge end thereof, comprising the steps of:

feeding cellulosic material through said intake end of the kiln into said drying zone,

transporting a bed of said cellulosic material through said kiln and continuously tumbling said bed,

withdrawing fuel gases generated within said kiln from said intake end so that they flow countercurrent to and in heat exchange relation with the cellulosic material bed and remove moisture therefrom in the drying zone and thermally decompose the volatiles therein in the devolatilization zone,

admitting air into the kiln overbed in the devolatilization zone to raise the temperature of said bed and enhance distillation of said volatiles,

admitting air into said gasifying zone only beneath said bed to convert the carbon in said cellulosic material into gas, and

regulating the mass flow rate of air admitted into said gasifying zone as a function of the rate that said cellulosic material is fed into said kiln wherein said regulating step includes regulating said mass flow rate of air admitted underbed into said gasifying zone so that the resulting gases flowing upward through said bed do not blow a substantial amount of solid particles away from the surface of the bed and entrain them in the overbed gases and wherein said kiln is inclined and said feeding step feeds said cellulosic material into the uphill intake end of said kiln and said transporting step includes rotating said kiln at a velocity such that said bed of cellulosic material occupies a segment of the rotating kiln cross section and is continuously tumbled.

4,318,714
FACILITATED SEPARATION OF A SELECT GAS THROUGH AN ION EXCHANGE MEMBRANE

Shiro G. Kimura; William J. Ward, III, and Stephen L. Matson, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 14, 1980, Ser. No. 149,764
Int. Cl.[3] B01D *53/22*
U.S. Cl. 55—16 9 Claims

1. A method for the selective separation of a gas from a mixture of gases which comprises

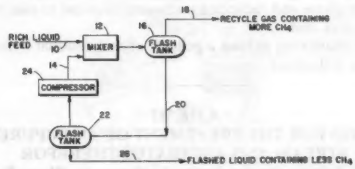
(a) providing a semi-permeable ion-exchange membrane having counter-ions electrostatically contained therein as part of said membrane, said counter-ions reversibly reacting with select gas molecules contained within a gaseous mixture, and

(b) contacting a first side of the semipermeable membrane with a mixture containing said gas, and (c) providing a means for removing the permeating gas from the opposite side of the membrane, thereby providing a transmembrane partial pressure gradient of the gases to be separated, and, in particular, the permeating gas.

4,318,715
PROCESS FOR SWEEPING METHANE FROM A PHYSICAL SOLVENT

Robert K. Chou, Parsippany, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 13, 1980, Ser. No. 206,334
Int. Cl.[3] B01D *45/00*
U.S. Cl. 55—44 9 Claims



1. A process for sweeping methane from a liquid composition comprising methane, carbon dioxide, hydrogen sulfide and a physical solvent used to absorb carbon dioxide and hydrogen sulfide impurities from an impure methane stream, said processes comprising the steps of

(a) cocurrently mingling said liquid composition with a first flash gas, said first flash gas produced at a first flash pressure, to form an intimately mixed stream having a higher concentration of each of carbon dioxide and hydrogen sulfide than said liquid composition;

(b) flashing said intimately mixed stream at a second flash pressure to yield (1) a second flash gas, said second flash gas being enriched in methane, and (2) a flash liquid; and

(c) flashing said flash liquid at said first flash pressure to produce said first flash gas and another flash liquid,

wherein said first flash pressure is lower than said second flash pressure, and said second flash pressure is lower than a feed pressure of said liquid composition.

4,318,716

PROCESS OF REGENERATING LADEN ABSORBENTS

Alexander Doerges; Manfred Kriebel, both of Frankfurt, and Johann Schlauer, Frankfurt-Goldstein, all of Fed. Rep. of Germany, assignors to Metallgesellschaft, Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

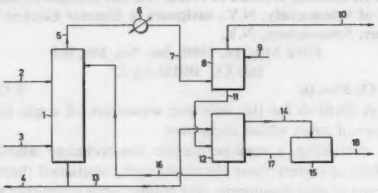
Continuation of Ser. No. 82,495, Oct. 9, 1979, abandoned, which is a continuation of Ser. No. 856,058, Nov. 30, 1977, abandoned.

This application Jul. 21, 1980, Ser. No. 170,414

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1976, 2654579

Int. Cl.[3] B01D *19/00, 53/14*

U.S. Cl. 55—48 12 Claims



1. A process for regenerating a hydrocarbon laden water miscible high boiling organic solvent obtained by scrubbing a hydrocarbon containing gas with said water miscible high boiling organic solvent at normal temperature and superatmospheric pressure which comprises

A. Stripping said hydrocarbon laden water miscible high boiling organic solvent whereby to obtain a mixture of volatile hydrocarbons containing gases and vapors and leave behind regenerated liquid solvent comprising said high boiling organic solvent and hydrocarbons;

B. Condensing said gases and vapors whereby to obtain a condensate containing hydrocarbons and water;

C. Contacting a partial stream of said regenerated solvent with said volatile hydrocarbon in a quantity of 3 to 30% by volume of the regenerated solvent to obtain a hydrocarbon rich phase and an aqueous phase containing said solvent wherein the water content is maintained at at least 30% by volume of the regenerated solvent;

D. Separating said aqueous phase from said hydrocarbon rich phase and recycling said aqueous phase to said regeneration; and

E. Withdrawing at least a portion of said residual hydrocarbon rich phase.

4,318,717

METHOD FOR THE TREATMENT OF AN IMPURE GAS STREAM AND APPARATUS THEREFOR

Bernard Sohier, Rouen, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Apr. 23, 1980, Ser. No. 143,043

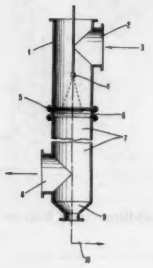
Claims priority, application France, Apr. 23, 1979, 79 22082

Int. Cl.[3] B01D *47/06, 47/12;* C11B *7/20*

U.S. Cl. 55—71 24 Claims

1. A method for the treatment of an impure gas stream, which comprises dispersing a cocurrently descending spray of atomized treatment liquid at an angle of 15° to 30° in a vertically descending stream of impure gas feed, introducing the resultant dispersed liquid interphase into a contact zone under such pressure of atomization of said liquid and under such liquid dispersing velocity and turbulence of said gas feed as to ensure effective interphase surface and contact time therefor, whereby the impure gas feed is efficiently scrubbed by said liquid, and thence directing the dispersed liquid interphase to a downstream separation zone and there subjecting the scrubbed gas stream to an abrupt 90° change in direction from vertical to horizontal and separating same from the interphase at essentially the original inlet velocity thereof and with essentially no content of treatment liquid therein, while at the same time maintaining the vertical descent of essentially all of the atomized treatment liquid to a liquid collection and recovery zone.

15. A gas-liquid phase contactor/separator, comprising an essentially vertical treatment column having gas feed inlet means and having means for directing the gas feed in a vertically descending direction; said contactor/separator further including means for establishing a cocurrently descending spray of atomized treatment liquid in said column and for dispersing same in the descending stream of gas feed, said column also having a downstream contact zone, said contact zone including an apertured diaphragm at the inlet thereto and



being positioned and arranged to ensure effective interphase surface and contact time therefor; an interphase separation zone positioned downstream from the contact zone outlet, said separation zone comprising means for abruptly changing the direction of flow of the then treated gas stream 90° from vertical to horizontal and for separating the same from the interphase at essentially the original inlet velocity thereof and with essentially no content of treatment liquid therein, a liquid collection and recovery zone positioned in the lower portion of said column such that the descent of essentially all of the atomized treatment liquid to said liquid collection and recovery zone is maintained.

4,318,718

DISCHARGE WIRE CLEANING DEVICE FOR AN ELECTRIC DUST COLLECTOR

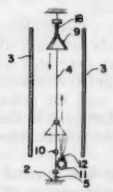
Masatoki Utsumi; Nobuo Ohi, both of Toyota; Yasuhiro Kishiue, Nagareyama, and Kazumi Nose, Matsudo, all of Japan, assignors to Ichikawa Woolen Textile Co., Ltd., Tokyo, Japan

Filed Jul. 14, 1980, Ser. No. 168,125

Claims priority, application Japan, Jul. 19, 1979, 54-98830[U]

Int. Cl.[3] B03C *3/00*

U.S. Cl. 55—121 8 Claims



1. An electric dust collector having a frame and at least one discharge wire supported on said frame, comprising a discharge wire cleaning device for cleaning said discharge wire, a slider having a downwardly enlarged skirt, said slider being slidably fitted over the discharge wire for movement up and down the wire, a gas ejector nozzle directed upwardly towards the skirt, and means for intermittently supplying pressurized gas to said nozzle, said gas being intermittently fed to said nozzle and ejected therefrom against said skirt so as to drive

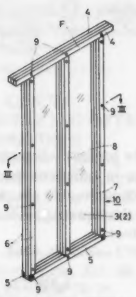
said slider along the wire in a first direction, said slider moving by gravity in a second direction opposite to said first direction when the supply of gas is interrupted, thereby removing the dust from the wire.

4,318,719

ELECTRODE FOR AN ELECTRIC DUST COLLECTOR

Hisashi Kato, 596-75, Sonobe, Wakayama-shi, Wakayama-ken, and Sadao Toyoda, 27-2, Shinsenriminamimachi 2-chome, Toyonaka-shi, Osaka-fu, both of Japan

Filed May 21, 1980, Ser. No. 151,924
Claims priority, application Japan, Jun. 8, 1979, 54-72594
Int. Cl.³ B03C *3/47, 3/64*
U.S. Cl. 55—147 **14 Claims**



1. An electrode for an electrically operable dust collector, comprising in combination:

a corrosion-resistant rigid frame, having a relatively small coefficient of expansion, and

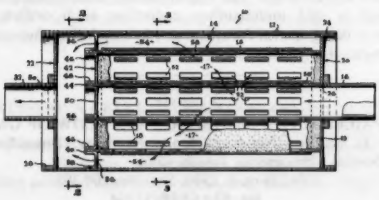
a flexible predominantly conductive sheet secured under stress to said frame, and including fiber cloth means having two major sides, and a flexible material means including a soft type synthetic resin or rubber coating at least one of said sides of said fiber cloth means, one of said means being predominantly conductive, the other of said means being substantially nonconductive.

4,318,720

EXHAUST FILTER MUFFLER

Donald L. Hoggatt, 201 Witmer St., Apt. 109, Los Angeles, Calif. 90026

Filed Jul. 19, 1979, Ser. No. 59,076
Int. Cl.³ B01D *46/00*
U.S. Cl. 55—276 **3 Claims**



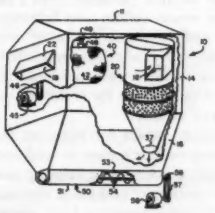
1. A combined muffler and engine exhaust filter comprising a fixed outer shell and a concentric inwardly spaced inner shell, said inner shell comprising inner and outer concentric perforated tubes disposed in radially spaced relationship to each other, said concentric tubes having longitudinally spaced inner and outer ends, a first closure member, said closure member circular in cross section with a circular centrally disposed opening and inner and outer longitudinally extending mounting flanges, the end portion of said inner concentric tube extending through said circular centrally disposed opening and abutting the facing surfaces of the inner longitudinally extending mounting flanges, the opposed surfaces of said outer mounting flanges abutting the inner surface of the end portion of said outer perforated tube whereby the space between the inner and outer concentric tubes is closed off at the outer end, a closure plug having longitudinally extending mounting flanges, said closure plug sized to close off the outer end portion of the inner perforated tube with its mounting flanges abutting the inner surface of the inner perforated tube in radially spaced relationship to the inner and outer mounting flanges on said closure member, whereby the inner and outer perforated tubes are held in concentric radially spaced relationship to each other, means for closing off the space between the inner and outer concentric tubes at the inner end, a filtering cloth wrapped around the surface of each perforated tube, a filter material filling the space between said perforated concentric tubes, an exhaust pipe extending into said fixed outer shell providing direct communication between the ambient air and the perforated cylindrical surfaces of said inner concentric tube, an engine exhaust pipe in fixed relation between an engine and the inner cylindrical perforated surface of the inner perforated tube to provide an engine exhaust path from the engine radially through the filter material between said inner and outer perforated tubes and out through said exhaust pipe, the length of the inner shell and the size and number of perforations and the spacing between the concentric perforated tubes large enough to filter the engine exhaust without causing an objectionable increase in engine back pressure, the space between the inner and outer shells and the exhaust tube large enough to provide the volume necessary to muffle the sound of the engine exhaust.

4,318,721

COTTON GIN FILTER

Harry S. Barr, Charlotte, N.C., assignor to Pneumafil Corporation, Charlotte, N.C.

Filed Apr. 21, 1980, Ser. No. 142,418
Int. Cl.³ B01D *50/00*
U.S. Cl. 55—337 **3 Claims**



1. Apparatus for filtering atmosphere contaminating particles from the air discharged from a cotton gin, said apparatus comprising:

a housing having an air inlet adapted for coupling to the gin to receive air discharged from the gin;

an inertial classifier having a cylindrical inlet plenum and tangential inlet connected to the housing inlet in said housing, slowing down the movement of relatively large particles in the air flowing into said housing from the gin causing same to drop from the airstream;

a cylindrical screen beneath the plenum forming part of said classifier through which a major part of the air fed into said housing is passed along with relatively smaller particles, said screen having openings through which the relatively large particles may not pass while passing at least 50% of the air and the relatively smaller particles entrained therein;

a secondary filter in said housing having a rotating cylindrical screen through which the air and particles passing from said cylindrical screen of said inertial classifier is fed, said secondary filter screen having openings filtering the relatively smaller particles of air from the air passed to said secondary filter;

an air discharge opening in said housing through which air from which contaminating particles have been removed is passed to the ambient atmosphere; and

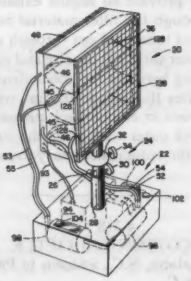
a compacting screw conveyor at the bottom of said housing to discharge the particles filtered from the air passing through said housing.

4,318,722

INFRARED RADIATION COOLER FOR PRODUCING PHYSIOLOGIC CONDITIONS SUCH AS A COMFORT OR HYPOTHERMIA

Gerald Altman, 41 Westminster Rd., Newton Centre, Mass. 02159

Filed Apr. 9, 1980, Ser. No. 138,494
Int. Cl.³ F25B *21/02*
U.S. Cl. 62—3 **16 Claims**



1. A radiation cooler for localized noncontact comprising:

(a) housing means including thin polymeric film means as a window for infrared radiation from a subject;

(b) condenser means within said housing means including reflecting surface means defining relatively extensive entrance means and relatively restricted exit means;

(c) transducing means within said housing means including receiving surface means for absorbing radiation from said restricted exit means;

(d) heat exchange means for reducing the temperature of said receiving surface means to subfreezing; and

(e) a gas dispersed within said housing means;

(f) at least that portion of said gas in contact with said receiving surface means having a frost point lower than said temperature of said receiving surface means.

4,318,723

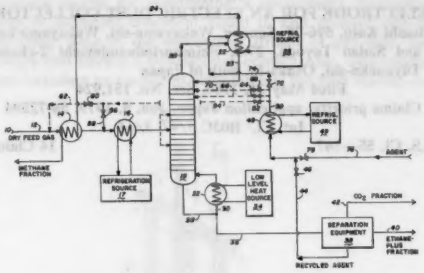
CRYOGENIC DISTILLATIVE SEPARATION OF ACID GASES FROM METHANE

Arthur S. Holmes, Shrewsbury, and James M. Ryan, Weston, both of Mass., assignors to Koch Process Systems, Inc., Westborough, Mass.

Filed Nov. 14, 1979, Ser. No. 94,226
Int. Cl.³ F25J *3/02*
U.S. Cl. 62—20 **20 Claims**

1. In a method for the distillative cryogenic separation of a mixture containing methane and an acid gas component in a distillation column to separate an enriched methane overhead product and a bottoms product containing a major portion of the acid gas component, and wherein said column is operated under conditions of temperature, pressure and acid gas composition which create a solids potential zone in the upper portion of said column, where said acid gas component would normally form solids:

the improvement which comprises adding a liquid solids-preventing agent for said acid gas component to the solids potential zone at a point in said column in an amount



sufficient to be present substantially throughout the solids potential zone in sufficient quantity, to prevent acid gas solids from occurring in the solids potential zone, and withdrawing the liquid agent with the acid gas containing bottoms product.

4,318,724

GLASS FIBER-FORMING APPARATUS

Kwan Y. Kim, Pickerington, and Michael T. Pellegrin, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 29, 1980, Ser. No. 221,112
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—1 **14 Claims**

1. An orifice plate for a glass fiber forming bushing of the type having a flat undersurface and a plurality of orifices formed therethrough, the improvement comprising grooves formed in said undersurface encircling each orifice, said grooves being spaced from one another such that they are not in intersecting relationship.

4,318,725

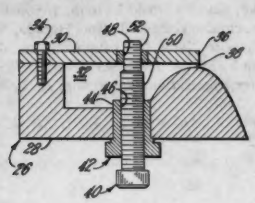
APPARATUS FOR DISCHARGING A FLOW OF GASES

John D. Phillips, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Nov. 6, 1980, Ser. No. 204,393
Int. Cl.³ C03B *37/04*
U.S. Cl. 65—16 **12 Claims**

1. An apperatus for forming fibers from molten mineral material, including a blower comprising a body member and a lid member defining a gas supply manifold and a gas discharge slot, wherein the improvement comprises a first threaded section positioned in said body member, a second threaded section positioned in said lid member and a screw member adapted to raise and lower said lid member to control the size of said gas discharge slot, said screw member having lower and upper

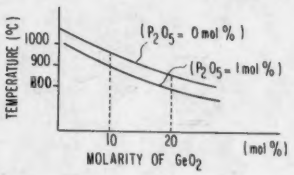
threaded portions, said lower threaded portion engaging said first threaded section and said upper threaded portion engaging said second threaded section, the threads of said lower threaded portion having a pitch unlike the pitch of the threads of said upper threaded portion.



4,318,726
PROCESS FOR PRODUCING OPTICAL FIBER PREFORM

Takao Edahiro, Mito; Gotaro Tanaka, Yokohama; Toru Kuwahara, Yokohama, and Michihisa Kyoto, Yokohama, all of Japan, assignors to Nippon Telegraph & Telephone Public Corp., Tokyo and Sumitomo Electric Industries, Osaka, both of, Japan

Filed Jul. 21, 1980, Ser. No. 170,392
Claims priority, application Japan, Jul. 20, 1979, 54/92313
Int. Cl.³ C03B *19/06*
U.S. Cl. 65—18.2 **10 Claims**



1. A process for producing an optical fiber preform, which comprises

forming a particulate glass rod containing a dopant in which the dopant concentration gradually increases toward the center of its radial cross section, and

uniformly, gradually heating all parts of the rod starting at a temperature below the minimum collapsing point of the fine glass particles in the center of the rod, and gradually increasing the temperature thereafter, so that the softening of the rod proceeds outwardly from the center producing a transparent glass rod preform.

4,318,727
CONTINUOUS CELLULAR GLASS MANUFACTURING METHOD

Tibor Pietsch, Santa Domingo de Silos, 8- Madrid 16, Spain

Filed Jun. 16, 1980, Ser. No. 159,807
Claims priority, application Spain, Jun. 18, 1979, 481.649
Int. Cl.³ C03B *19/08*
U.S. Cl. 65—22 **10 Claims**

1. A continuous method for the preparation of a cellular glass sheet comprising a lower cellular layer of low density, a second cellular layer of higher density, and an upper decorative solid layer which consists of

(1) mixing powder glass with at least one substance capable of generating a gas on heating to obtain a first mixture;

(2) drying said first mixture until the water content is not in excess of 5% by weight;

(3) granulating said first mixture;

(4) spreading a separating substance on a conveyor belt, and filling the holes of the conveyor belt with said separating substance;

(5) distributing said first mixture from step (3) over said belt

(6) superimposing over the first mixture from step (5) a second granulated mixture of glass and at least one substance capable of generating a gas, said second mixture being adapted to produce a cellular glass of higher density than said first mixture after heating and cellulation;

(7) superimposing upon said second mixture granular glass enamel to obtain an assembly of said first and second mixture and said granular glass enamel;

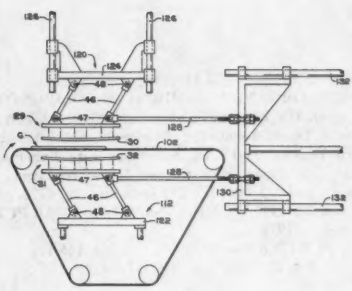
(8) transporting said assembly into a furnace at a temperature of 830° C. whereby the glass melts and expands and said first and second mixture are converted into cellular glass;

(9) calibrating said assembly at 550° C. and cooling whereby a sheet is obtained comprising a first cellular glass layer, a second cellular glass layer of density greater than said first layer and an upper decorative layer.

4,318,728
DOUBLE LINK ARRANGEMENT FOR PRESS BENDING MOLDS AND METHOD OF PRESS SHAPING GLASS SHEETS

George R. Claassen, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 70,277, Aug. 27, 1979, Pat. No. 4,244,724. This application Aug. 1, 1980, Ser. No. 174,314
The portion of the term of this patent subsequent to Jan. 13, 1998, has been disclaimed.
Int. Cl.³ C03B *23/03*
U.S. Cl. 65—106 **24 Claims**



1. A method of press bending a continuously moving sheet, comprising the steps of:

continuously moving the sheet from a first location along a sheet movement path toward a second location between a pair of spaced pressing molds having complementary shaped surfaces aligned with one another in a predetermined orientation;

moving the spaced pressing molds toward one another to engage opposite major surfaces of the moving sheet between the aligned surfaces;

simultaneously moving the molds and sheet along a portion of the sheet movement path to maintain engagement between the aligned surfaces and the opposite major surfaces of the moving sheet to shape the sheet; while

maintaining the predetermined orientation of the aligned surfaces during the simultaneous moving step.

11. Apparatus for press bending a moving sheet comprising:

conveyor means for continuously moving the sheet from a first location along a sheet movement path toward a second location;

a pair of spaced pressing molds having complementary

shaped surfaces aligned with one another in a predetermined orientation;

means for simultaneously moving the pressing molds toward one another to engage opposite major surfaces of the moving sheet between the aligned surfaces of the molds without stopping the sheet;

means for moving the molds and sheet along a portion of the sheet movement path to maintain engagement therebetween; and

means for maintaining the predetermined orientation of the aligned surfaces while maintaining engagement between the aligned surfaces and the opposite major surfaces of the moving sheet.

4,318,729

STABLE LIQUID N-P-K FERTILIZER COMPOSITION AND METHOD OF USE

Robert M. Coury, Westerville, Ohio, assignor to Chem-Lawn Corporation, Columbus, Ohio

Filed Jan. 10, 1980, Ser. No. 110,975

Int. Cl.³ C05C *9/02*

U.S. Cl. 71—29 **6 Claims**

1. A storable N-P-K liquid fertilizer composition having improved stability and an N-P-K ratio of from about 18:3:3.97 to 18:1:1, consisting essentially of a mixture of a methylol urea containing solution having a nitrogen content of approximately 15-35%, dibasic potassium phosphate, and water.

4,318,730

AQUATIC ORGANISM INHIBITING COMPOSITION

Kogoro Mori, 313, Kusanagi, Shimizu-shi, Shizuoka 424; Hideo Ohi, 6-31, Ohiwa 1-chome, Shizuoka-shi, Shizuoka 420, and Chihiro Yazawa, 11-12-306, Shinohara Kita 2-chome, Kohhoku-ku, Yokohama-shi, Kanagawa 222, all of Japan

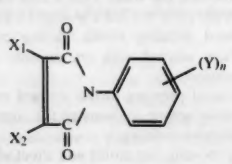
PCT No. PCT/JP79/00012, § 371 Date Jun. 20, 1979, § 102(e) Date Jun. 20, 1979, PCT Pub. No. WO79/00533, PCT Pub. Date Aug. 9, 1979

PCT Filed Jan. 18, 1979, Ser. No. 165,122

Int. Cl.³ A01N *37/100, 55/04, 59/16*

U.S. Cl. 71—67 **2 Claims**

1. An aquatic organism inhibiting composition in the form of a paint, solution or emulsion which comprises an amount of at least one N-arylmaleimide having the formula



wherein X_1 and X_2 are the same or different and respectively represent hydrogen or a halogen atom; and Y represents a halogen atom or a lower alkyl or a lower alkoxy group and n is 0 or an integer of 1 to 3 and an amount of at least one organotin compound selected from the group consisting of bis(tri-n-butyl tin)mesodibromosuccinate, triphenyl tin monochloroacetate, triphenyl tin hydroxide and bis(tri-n-butyl tin)oxide and an amount of zinc oxide, said amounts being effective when taken together to inhibit aquatic organisms.

4,318,731

Δ^2-1,2,4-TRIAZOLIN-5-ONE DERIVATIVES AND HERBICIDAL USAGE THEREOF

Mitsuru Kajioka, Sakai; Hitoshi Kurono, Toyonaka; Katsumasa Okawa, Kawachinagano, and Tatsuo Harada, Mitaka, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Japan

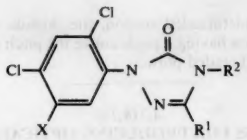
Filed Jun. 24, 1980, Ser. No. 162,558

Claims priority, application Japan, Aug. 25, 1979, 54/108509; Apr. 22, 1980, 55/53206

Int. Cl.³ A01N *43/64*; C07D *249/12*

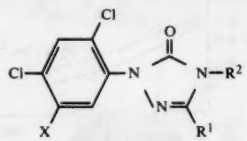
U.S. Cl. 71—92 **12 Claims**

1. A Δ^2-1,2,4-triazolin-5-one derivative represented by the formula



wherein R^1 is a C_1–C_4 alkyl; R^2 is a hydrogen atom, a C_1–C_6 alkyl group or a C_2–C_4 alkenyl group; and X is a hydroxy group, a C_1–C_4 alkyl group, a C_1–C_6 alkyloxy group, an alkyloxyalkyloxy group of which two alkyls may be same as or different from each other and each alkyl is of C_1–C_4, a C_2–C_4 alkenyloxy, or an alkyloxycarbonylalkyloxy group of which two alkyls may be same as or different from each other and each alkyl is of C_1–C_4.

7. A herbicidal composition comprising an herbicidally effective amount of a Δ^2-1,2,4-triazolin-5-one derivative and a diluent, said derivative being represented by the formula



wherein, R^1 is a C_1–C_4 alkyl; R^2 is a hydrogen atom, a C_1–C_6 alkyl group, or a C_2–C_4 alkenyl group; and X is a hydroxy group, a C_1–C_4 alkyl group, a C_1–C_6 alkyloxy group, an alkyloxyalkyloxy group of which two alkyls may be same as or different from each other and each alkyl is of C_1–C_4, a C_2–C_4 alkenyloxy, or an alkyloxycarbonylalkyloxy group of which two alkyls may be same as or different from each other and each alkyl is of C_1–C_4.

4,318,732

METHODS OF IMPROVING THE VISCOSITY BUILDING PROPERTIES OF COLLOIDAL CLAYS

Edgar W. Sawyer, Jr., Hagerstown, Md., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 908,329, May 22, 1978, abandoned. This application Feb. 4, 1980, Ser. No. 118,358

Int. Cl.³ C09K *7/04*; C05G *3/00*

U.S. Cl. 71—64.8 **2 Claims**

1. A process for producing a high yield, stable colloidal clay product particularly adapted for use in thickening of liquid solutions used in drilling fluids and suspension fertilizers, which consists solely of post adding a predetermined percentage of unslaked lime to a dry, particulate ground clay of a colloidal grade, wherein said predetermined percentage is between 0.25 to 2.0% of the weight of said clay, with said unslaked lime selected from the group consisting of soft burnt calcium oxide and glass house lime with said ground clay selected from the group consisting of attapulgite, sepiolite palygorskite, said colloidal clay product having a yield of 130 B/T minimum after a storage period of one year in paper bags,

where B/T equals barrels of 15 centipose mud per ton of clay while exhibiting a yield degradation of no greater than 0.33 B/T per week, to enable said product to be stored and shipped in paper bags without plastic liners.

4,318,733

TOOL STEELS WHICH CONTAIN BORON AND HAVE BEEN PROCESSED USING A RAPID SOLIDIFICATION PROCESS AND METHOD

Ranjan Ray, Waltham, Mass.; Donald E. Polk, Washington, D.C., and Bill C. Giessen, Cambridge, Mass., assignors to Marko Materials, Inc., North Billerica, Mass.

Filed Nov. 19, 1979, Ser. No. 95,381
Int. Cl.³ C22C *38/32*
U.S. Cl. 75—0.5 BA **21 Claims**

1. The alloy consisting of $Fe_{bal}C_{0.75\text{-}1.50}Cr_{0\text{-}20}V_{0\text{-}20}(Mo,W)_{2\text{-}20}Co_{0\text{-}20}B_{0.5\text{-}1.5}$, where the Fe_{bal} may contain incidental impurities and where the Fe is present at a level of at least 50 wt% and where the total content of boron and carbon is less than 2.4 wt%.

20. The method of making in powdered form the alloy of claim 1 characterized by a predominantly single phase body-centered cubic structure comprising the steps of

(a) forming a melt of said alloy,

(b) contacting said melt against a rapidly moving quench surface so as to quench the melt at a rate of approximately 10^5 to 10^7 °C./sec, and,

(c) comminuting the quenched melt into a powder.

4,318,734

REDUCTION OF IRON OXIDE UTILIZING DEHYDRATING AGENT

Lawrence M. Scott, Newark; Irving Wolf, Los Altos, and Yu C. Lee, Newark, all of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Feb. 25, 1980, Ser. No. 124,197
Int. Cl.³ B22F *9/00*
U.S. Cl. 75—0.5 BA **6 Claims**

1. A process of reducing an acicular iron oxide to produce acicular metal particles suitable for magnetic recording comprising:

a. producing a mixture by mixing particles of an acicular iron oxide with a desiccant selected from calcium, mixtures of calcium hydride with calcium and calcium carbide with calcium;

b. subjecting said mixture to a stream of hydrogen at an elevated temperature until at least some of said oxide is reduced to metallic iron and;

c. cooling said mixture and separating said iron from said desiccant.

4,318,735

PROCESS FOR PREPARING MAGNETIC PARTICLES WITH METALLIC REGION THEREIN, AND MAGNETIC PARTICLES PREPARED BY THE PROCESS

Akio Mishima; Hiroyuki Kondo, and Akira Mukaizaka, all of Hiroshima, Japan, assignors to Toda Kogyo Corp., Hiroshima, Japan

Filed Jun. 6, 1980, Ser. No. 157,115
Claims priority, application Japan, Jun. 18, 1979, 54-77301; Sep. 29, 1979, 54-125926
Int. Cl.³ H01F *1/09, 1/33*
U.S. Cl. 75—0.5 BA **22 Claims**

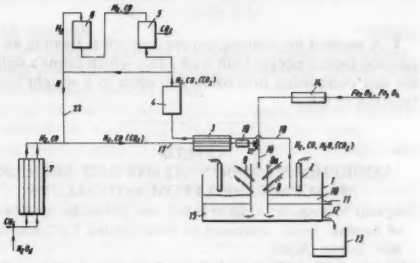
1. A process of preparing a magnetic particle having a metallic region therein, comprising a first stage of oxidizing a surface of a particle of a metal selected from the group consisting of iron and iron alloys in an atmosphere containing both H_2 and H_2O gases at an oxidizing temperature below 900° C. and a second stage of further oxidizing the surfaces of the particles formed at the first oxidation stage in an atmosphere containing O_2 gas.

4,318,736

METHOD FOR MANUFACTURING STEEL FROM IRON ORE DUST BY DIRECT REDUCTION

Manfred Driemeyer, Issum, Fed. Rep. of Germany, assignor to Mannesmann DeMag AG, Duisburg, Fed. Rep. of Germany

Filed Oct. 10, 1979, Ser. No. 83,387
Int. Cl.³ C21B *11/10*
U.S. Cl. 75—38 **6 Claims**



1. A method for manufacturing steel by the direct reduction of iron ore dust, comprising the steps of;

(a) utilizing a single reaction vessel containing an iron smelt of molten iron and slag and a heated tubular reduction duct extending both above said iron smelt and extending below said molten iron smelt;

(b) preheating the iron ore dust;

(c) preheating a gas mixture, serving both as a reducing agent and a transport adjuvant; to a temperature within the range of between about 400° to 800° C., said gas mixture comprising carbon monoxide and predominantly H_2;

(d) mixing said preheated gas mixture with said preheated iron ore dust to obtain a gas mixture with entrained iron ore dust;

(e) heating said gas mixture with entrained iron ore dust in said tubular reduction duct extending above said reaction vessel to a temperature within the range of about 1000° to 1400° C. to thereby utilize the high reduction potential of high temperature H_2 thereby causing spontaneous reduction in said tubular reduction duct of said iron ore dust to metallic iron;

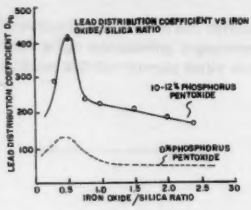
(f) charging said metallic iron and gas mixture into said reaction vessel below the molten surface of said molten iron located in said reaction vessel, thereby transforming said metallic iron into the molten liquid phase; and

(g) tapping said molten liquid phase into a separate vessel for further metallurgical processing into steel.

4,318,737
COPPER REFINING AND NOVEL FLUX THEREFOR

Everett J. Canning, Jr., Plainsboro, N.J., assignor to Western Electric Co. Incorporated, New York, N.Y.

Filed Oct. 20, 1980, Ser. No. 198,516
Int. Cl.[3] C22B *15/00*
U.S. Cl. 75—76 9 Claims



1. A method for refining copper comprises treating an oxygenated molten copper bath with a flux which forms a skimmable slag comprising iron oxide and silica in a weight ratio of from 0.4 to 0.8.

4,318,738
AMORPHOUS CARBON ALLOYS AND ARTICLES MANUFACTURED FROM SAID ALLOYS

Tsuyoshi Masumoto; Akihisa Inoue, and Shunsuke Arakawa, all of Sendai, Japan, assignors to Shin-Gijutsu Kaihatsu Jigyodan, Tokyo, Japan

PCT No. PCT/JP79/00024, § 371 Date Oct. 3, 1979, § 102(e) Date Sep. 25, 1979, PCT Pub. No. WO79/00674, PCT Pub. Date Sep. 20, 1979
PCT Filed Feb. 1, 1979, Ser. No. 170,664
Claims priority, application Japan, Feb. 3, 1978, 53-10397; Dec. 28, 1978, 53-160978
Int. Cl.[3] C22C *38/32, 38/36, 38/10*
U.S. Cl. 75—122 17 Claims

1. Carbon series amorphous alloys characterized in that carbon is used as a metalloid having amorphous alloy forming ability and having a component composition substantially shown by the following formula

$$[X_aCr_bM_cQ_d]X_aM_cQ_d$$

wherein X is a atomic% of at least one selected from Fe, Co and Ni, M is atomic% of at least one selected from Mo and W, Q is carbon or a combination of carbon and nitrogen contained in an amount of d atomic%, a is 14–86, c is 4–38, d is 10–26 and the sum of a, c and d is 100, and a part of M may be at least one element selected from the group (A) consisting of V, Ta and Mn, at least one element selected from the group (B) consisting of Nb, Ti and Zr, or a combination of at least one element selected from the above described group (A) and at least one element selected from the above described group (B) and the content of the group of V, Ta and Mn and the group of Nb, Ti and Zr is not more than 10 atomic% and not more than 5 atomic% respectively, and the content of N is not more than 4 atomic%.

4,318,739
STEEL HAVING IMPROVED SURFACE AND REDUCTION OF AREA TRANSVERSE PROPERTIES, AND METHOD OF MANUFACTURE THEREOF

Albert L. Lehman, Glenview, Ill., assignor to A. Finkl & Sons Co., Chicago, Ill.

Filed Jun. 5, 1979, Ser. No. 45,684
Int. Cl.[3] C22C *38/06*
U.S. Cl. 75—124 6 Claims

1. A low alloy medium carbon forging steel consisting essentially of, by weight percent, and characteristics:

Composition	
C	.50–.60
Mn	.75–.95
S	Usual
P	Usual
Si	.15–.35
Cr	.85–1.15
Ni	.60–2.00
Mo	.25–.55
V	.0–.30
Al	.015–.30
Ti	.003–.0075

Balance—Substantially all Fe with the usual impurities, together with the following characteristics:

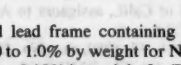
(a) reduction of area transverse—15%–28%

(b) ratio of (i) reduction of area, transverse to (ii) reduction of area, longitudinal—up to 0.98.

4,318,740
LOW ALLOY LEAD FRAME

Tomoyuki Koyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Jan. 29, 1980, Ser. No. 116,644
Claims priority, application Japan, Jan. 31, 1979, 54-009181
Int. Cl.[3] C22C *38/02, 38/04, 38/08, 38/20*
U.S. Cl. 75—125 6 Claims



1. An improved lead frame containing 0.30 to 1.50% by weight for Cr; 0.20 to 1.0% by weight for Ni; 0.15 to 0.75% by weight for Si; 0.08 to 0.15% by weight for Ti; 0.05 to 0.60% by weight of P; 0.04 to 0.70% by weight of Cu; up to 0.19% by weight of C; and the balance Fe.

4,318,741
RARE EARTH METAL STANNIDES

Joseph P. Remeika, Warren Township, Somersel County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 2, 1980, Ser. No. 155,678
Int. Cl.[3] H01B *1/02;* C22C *13/00*
U.S. Cl. 75—175 R 7 Claims

1. Device comprising an electrically conductive element and characterized in that the element comprises a material having the formula:

$$A\ B_x\ Sn_y\ C_z$$

where x and y are numbers approximately fixed depending on the identity of the atom A, A and the associated numbers are selected from the group consisting of:

La(x = 1.2, y = 4.5),	Ce(x = 1.2, y = 4.0),	Pr(x = 1.2, y = 4.2),
Nd(x = 1.1, y = 4.1),	Sm(x = 1.2, y = 4.3),	Eu(x = 1.2, y = 3.9),
Gd(x = 1.1, y = 3.7),	Tb(x = 1.1, y = 3.6),	Dy(x = 1.1, y = 3.6),
Ho(x = 1.2, y = 3.9),	Er(x = 1.1, y = 3.6),	Tm(x = 1.3, y = 4.0),
Yb(x = 1.4, y = 4.6),	Lu(x = 1.2, y = 4.0),	Ca(x = 1.2, y = 4.5),

and mixtures of these,

B is selected from the group consisting of Rh, Ir, Co, Ru and mixtures thereof,

C is selected from the group consisting of Pb, Bi, Ge and mixtures thereof,

and z has a value in the range of 0 to 1.

4,318,742

ODONTOLOGIC COMPOSITIONS AND PREPARATION THEREOF

Oddvin Lokken, Rye, N.Y., assignor to Solar Dental Co., Inc., North Miami Beach, Fla.

Continuation-in-part of Ser. No. 966,605, Dec. 5, 1978, abandoned. This application Sep. 27, 1979, Ser. No. 79,380

Int. Cl.³ C08L *1/02, 1/26, 7/00, 9/00*

U.S. Cl. 106—35 **10 Claims**

1. A denture-adhesive composition containing a major amount of a water-insoluble natural or synthetic polymer gum base selected from the group consisting of chicle, chicle gum, zapota gum, balata, butadiene-styrene rubber, butyl rubber, food grade petroleum wax, synthetic petroleum wax, polyethylene having a molecular weight of from about 2000 to 21,000, polyisobutylene having a minimum molecular weight of about 37,000, polyvinylacetate having a minimum molecular weight of about 2000, and mixtures of two or more of same and from about 1½ to 35 percent by weight based on the total weight of the composition of a hydrophilic polymer initially of a fine particle size, said hydrophilic polymer being selected from the group consisting of polymers and copolymers of methacrylic acid esters containing at least one hydroxyl group in the side chain, alpha-cellulose, sodium carboxy methyl cellulose, and calcium sodium poly(vinyl methyl ether maleate), and said hydrophilic polymer being sufficient to permit removal of the composition from oral tissue and the denture.

4,318,743

CURABLE PIGMENTED SILICATE COMPOSITIONS

John E. Blasko; William G. Boberski, both of Gibsonia, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 73,977, Sep. 10, 1979, abandoned. This application Nov. 26, 1980, Ser. No. 210,497

Int. Cl.³ C04B *19/04*

U.S. Cl. 106—84 **26 Claims**

1. A curable coating composition having improved pigment dispersion, consisting essentially of:

(a) an aqueous phase of

(i) from about 2 percent to about 50 percent of a water-soluble alkali metal silicate glass having a SiO_2:M_2O mole ratio of about 2:1 to about 4:1 wherein M represents the alkali metal;

(ii) from about 0.01 percent to about 5 percent of a water-soluble base having a basicity greater than that of the silicate glass; and

(iii) from about 50 percent to about 98 percent of water;

(b) pigment, wherein the pigment represents from about 5 percent to about 90 percent by volume of the solids in the composition; and

(c) a water-soluble latent insolubilizing agent for the silicate.

4,318,744

STRENGTH ENHANCING ADMIXTURE FOR CONCRETE COMPOSITIONS

Vance H. Dodson, Walpole, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Jun. 6, 1980, Ser. No. 156,992

Int. Cl.³ C04B *7/35*

U.S. Cl. 106—90 **9 Claims**

1. An admixture composition for Portland cement concrete containing Pozzolan, said admixture composition comprising a mixture containing at least one component from each of the following groups:

(A) salts of lignosulfonic acids; hydroxylated carboxylic acids and salts thereof; and glucose polymers;

(B) alkanolamines; and

(C) sodium chloride; sodium nitrite; calcium nitrite; and formic acid;

said components from said groups being present in the following amounts, based upon the combined weight of cement and pozzolan in said concrete;

Group (A), 0.014 to 0.203 percent by weight;

Group (B), 0.005 to 0.300 percent by weight; and

Group (C), 0.050 to 0.300 percent by weight.

4,318,745

PROCESS AND PLANT FOR PRODUCING HYDRAULIC CEMENT

Fritz Kraus, Vöcklabruck, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Oct. 14, 1980, Ser. No. 196,779

Claims priority, application Austria, Oct. 19, 1979, 16817/79

Int. Cl.³ C04B *7/02*

U.S. Cl. 106—100 **7 Claims**

1. In a process of producing hydraulic cement comprising

mixing a pulverized raw mixture in a vertical calciner with comminuted preheated fuel,

burning said fuel in said calciner to supply heat to said pulverized raw mixture in order to calcine the same,

using hot exhaust gases from said calciner to preheat said pulverized raw mixture before it enters said calciner,

entraining said pulverized mixture which has been calcined in said exhaust gases to carry said mixture out of said calciner,

separating said calcined pulverized mixture from said exhaust gases and then feeding said pulverized mixture to a rotary kiln,

burning said pulverized mixture in said rotary kiln to produce cement clinker,

cooling said cement clinker in a cooling air stream, which is thus heated,

feeding an exhaust gas stream consisting of at least part of the exhaust gases from said rotary kiln into said calciner from below, and

supplying said calciner with combustion air consisting of at least part of the thus heated cooling air,

the improvement residing in that said fuel is comminuted in contact with said exhaust gas stream and is then entrained into said calciner by said exhaust gas stream.

4,318,746

HIGHLY STABLE GEL, ITS USE AND MANUFACTURE

Kevin Claffey, Brooklyn, and Lloyd Osipow, New York, both of N.Y., assignors to IPCO Corporation, White Plains, N.Y.

Filed Jan. 8, 1980, Ser. No. 110,450

Int. Cl.³ C08L *1/28, 5/00*

U.S. Cl. 106—194 **34 Claims**

1. A gel comprising:

a first polymer in weight percentage of at least 0.5 percent that dissolves, disperses or hydrates in hot water and that forms or can be made to form a rigid gel on cooling,

a second polymer in weight percentage of at least 2.0 percent that is insoluble in hot water and that dissolves or hydrates on cooling and is compatible with said first polymer, and

water, said polymers having been combined in hot water.

16. A method of forming a gel comprising the steps of:

combining a first polymer and water, said first polymer being one that dissolves, disperses or hydrates in hot water,

raising the temperature of said water and polymer enough that said polymer dissolves, disperses or hydrates,

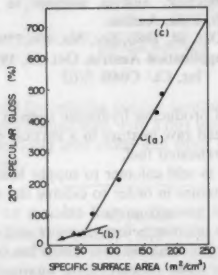
adding a hot water insoluble polymer to said water and first polymer when they are at a temperature higher than that at which said first polymer dissolves, disperses or hydrates

and higher than that at which said hot water insoluble polymer begins to dehydrate and
cooling the resulting composition to form a rigid gel.

4,318,747
METAL FLAKE PIGMENT AND METHOD OF PREPARING THE SAME

Shizuo Ishijima, Mishima, and Yasunobu Imasato, Fuji, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 6, 1980, Ser. No. 157,237
Claims priority, application Japan, Jun. 8, 1979, 54/71194
Int. Cl.³ B02C *15/00*; C09C *1/62*
U.S. Cl. 106—290 **6 Claims**



1. A metal flake pigment comprising metal flakes between which no substantial aggregation is formed, said flakes (i) having a specific surface area, determined by a BET method, of 65 through 250 m^2/cm^3, (ii) having such a particle size distribution that at least 99.5% of the flakes pass through a screen having an opening size of 20 microns and at least 90% of the flakes pass through a screen having an opening size of 5 microns (iii) having a leafing value, determined by a DIN 55923 method, of at least 1%, (iv) having on the surfaces thereof a bi-molecule layer of an acid selected from the group consisting of lauric acid, myristic acid, palmitic acid, stearic acid, arachic acid, behenic acid, pelargonic acid and undecanoic acid and (v) having a water coverage, determined by a DIN 55923 method, of at least 135,000 cm^2/cm^3.

4,318,748
CONTINUOUS PROCESS FOR SACCHARIFICATION OF WHOLE STARCHY MATERIALS

John A. Church, Princeton Junction, N.J., assignor to American Can Company, Greenwich, Conn.

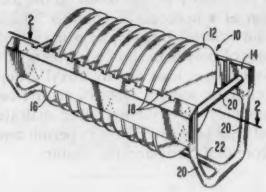
Filed Apr. 9, 1980, Ser. No. 138,692
Int. Cl.³ C13K *1/06*
U.S. Cl. 127—38 **7 Claims**

1. A continuous process for the saccharification of whole grain to produce glucose comprising the steps of:
(a) substantially continuously introducing into one end of a tubular reactor and aqueous mixture of unpasted grain containing from about 50 to 65 weight percent solids, and constricting the other end of said reactor so as to develop a back pressure therein;
(b) substantially continuously injecting a strong mineral acid into said mixture in a concentration sufficient to catalyze the hydrolysis thereof;
(c) substantially continuously injecting steam and water into said mixture, at a location downstream from said one end of said reactor, to produce a reaction mass containing about 15 to about 35 weight percent solids; said steam being injected in an amount sufficient to maintain the temperature of said reaction mass at about 160° to 210° C.; and to thereby effect hydrolysis of said material in the presence of said acid;
(d) thereafter, substantially passing said reaction mass, into and through a reaction zone of said reactor located downstream from the steam and water injection location, the length of said reaction zone and the rate of mixture introduction being so selected as to afford an average residence time of about 1 to 10 minutes for each increment of said mass in said zone, and said back pressure therewithin being about 100 to 280 pounds per square inch; and
(e) substantially continuously discharging said mass from said reactor.

4,318,749
WETTABLE CARRIER IN GAS DRYING SYSTEM FOR WAFERS

Alfred Mayer, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 23, 1980, Ser. No. 162,086
Int. Cl.³ B08B *3/10, 13/00*
U.S. Cl. 134—25.4 **20 Claims**



1. In a wafer carrier adapted to support a semiconductor substrate while being exposed to a liquid during processing, the improvement in said carrier comprising the parts thereof that make contact with said substrate having a surface wettable by said liquid and said wettable surface having a roughened surface of a material that is capable of being hydroxylated.

5. In a method of processing a semiconductor substrate including the steps of cleaning said substrate in a cleaning solution while being supported in a wafer carrier and drying said substrate after removal from said cleaning solution, the improvement in said method comprising performing said drying step in the same wafer carrier utilized during said cleaning step, wherein the parts of said carrier that make contact with said substrate have a surface wettable by said cleaning solution and said wettable surface comprises a roughened surface of a material that is capable of being hydroxylated.

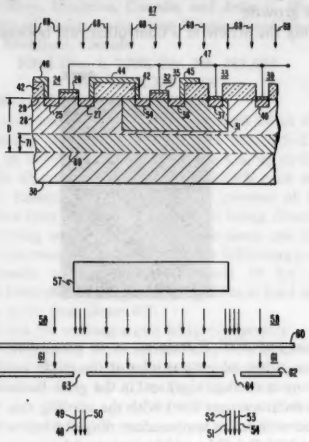
4,318,750
METHOD FOR RADIATION HARDENING SEMICONDUCTOR DEVICES AND INTEGRATED CIRCUITS TO LATCH-UP EFFECTS

Prosenjit Rai-Choudhury, Export, and John Bartko, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 28, 1979, Ser. No. 107,966
Int. Cl.³ H01L *21/263, 21/22, 7/54*
U.S. Cl. 148—1.5 **9 Claims**

1. A method for eliminating the latch-up effect in integrated circuits having a parasitic pnpn structure comprising the steps of:

irradiating said circuit with high energy ions to introduce a region of high atom displacement, vacancy-interstitial



pairs, to provide low lifetime regions in said circuit to lower parasitic transistor gain.

4,318,751

SELF-ALIGNED PROCESS FOR PROVIDING AN IMPROVED HIGH PERFORMANCE BIPOLAR TRANSISTOR

Cheng T. Horng, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 13, 1980, Ser. No. 129,928

Int. Cl.[3] **H01L** *21/203, 21/265, 21/31*

U.S. Cl. 148—1.5 **7 Claims**

1. In a method for fabricating a bipolar transistor structure in a silicon substrate of a first conductivity type, said substrate having a planar surface, a subcollector region of opposite conductivity type disposed therein, a layer of opposite conductivity type epitaxial material on said planar surface, first and second spaced apart adjacent isolated regions, said first isolated region being provided for the to be formed emitter/base region of said bipolar transistor structure and said second isolated region being provided for the to be formed collector reach through region of said bipolar transistor structure, said method comprising the following steps:

(a) form a first oxide layer and a silicon nitride layer, in the order recited, on said epitaxial layer;

(b) form a relatively thick oxide layer over said silicon nitride layer;

(c) utilizing photolithographic techniques open two spaced apart windows in a photoresist mask to expose areas of the relatively thick oxide layer;

(d) utilizing the photoresist mask etch and undercut the exposed relatively thick oxide layer to expose the corresponding areas of the silicon nitride; (emitter mask partially formed);

(e) utilizing the photoresist mask reactive ion etch the exposed silicon nitride layer and the first oxide layer to the epitaxial layer;

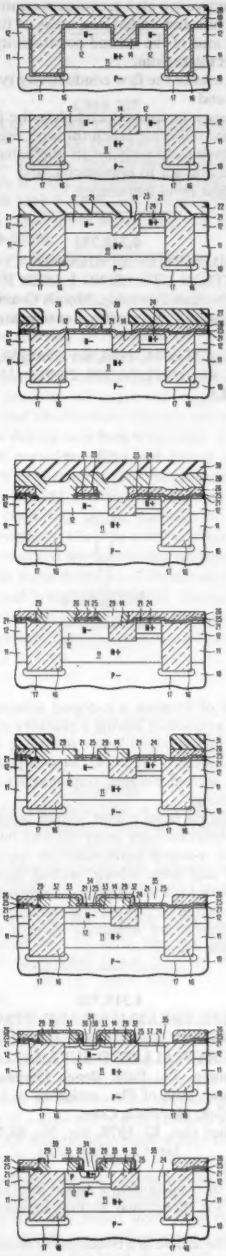
(f) ion implant ions of the first conductivity type to dope an inactive base;

(g) strip photoresist;

(h) form a relatively thick layer of first conductivity type doped polysilicon on the exposed surface of the substrate;

(i) utilizing known photolithographic techniques, including the deposition of a photoresist layer, planarize the exposed surface of the substrate;

(j) utilize reactive ion etch techniques to etch photoresist and polysilicon to surface level of said relatively thick oxide layer;



(k) remove remaining portions of relatively thick oxide layer overlying said first and second isolated regions;

(l) form an oxide layer on the exposed surface of said polysilicon layer;

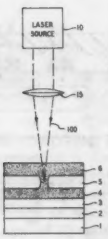
(m) utilizing known photolithographic techniques form a block-out mask for use in opening emitter and collector contacts;
(n) utilizing reactive ion etch techniques remove exposed areas of silicon nitride and underlying areas of first oxide layer;
(o) ion implant ions of the second conductivity type into emitter and collector regions;
(p) ion implant ions of the first conductivity type into an active base region; and
(q) utilizing known techniques complete the following:
(1) ion implant collector reach-through region,
(2) emitter drive-in to activate all implanted dopants,
(3) open base contact to polysilicon, and
(4) provide first level metallurgy.

4,318,752

HETEROJUNCTION SEMICONDUCTOR LASER FABRICATION UTILIZING LASER RADIATION

Ping K. Tien, Chatham Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 16, 1980, Ser. No. 150,460
Int. Cl.³ H01L *21/203, 29/205, 21/263*
U.S. Cl. 148—1.5 **12 Claims**



1. A method of forming a p-doped selected area in an n-doped layer of a structure having a plurality of epitaxial layers on a substrate, said epitaxial layers including in tandem a first p-doped semiconductor layer (4), an n-doped semiconductor layer (5) and a second p-doped semiconductor layer (6), said method comprising:

focusing radiation from a laser source through said second p-doped semiconductor layer (6) and onto said selected area of said n-doped semiconductor layer (5) to provide heating of said area, which heating causes diffusion of p-dopant into said selected area, whereby said selected area is converted to p-type, said radiation having a wavelength which is not absorbed by said second p-doped semiconductor layer.

4,318,753

THERMAL TREATMENT AND RESULTANT MICROSTRUCTURES FOR DIRECTIONAL RECRYSTALLIZED SUPERALLOYS

Ralph E. Anderson, Jr., Palm Beach Gardens, and Scott E. Hughes, Jupiter, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 12, 1979, Ser. No. 84,263
Int. Cl.³ C22F *1/10*
U.S. Cl. 148—3 **6 Claims**

1. A method of conditioning a nickel base superalloy article in preparation for directional recrystallization including the steps of:

a. providing the article in a condition of homogeneity at least equal to that provided by powder metallurgy techniques and with a grain size of ASTM 3–4 or smaller;
b. heating the article to a temperature below, but within about 100° F. of the gamma prime solvus for from about 1 to about 10 hours to dissolve a substantial quantity of the gamma prime phase and to permit some precipitation and agglomeration of the gamma prime phase at triple points and in grain boundaries without permitting significant grain growth;
c. cooling the article at a controlled rate between about 5°

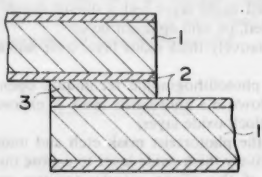
F./min and 300° F./min so as to precipitate and grow gamma prime phase particles at the triple points (80–140 microns in average size) and in the grain boundaries (7–60 microns in average size) with the cooling rate being controlled within the temperature range of below but within about 250° F. of the gamma prime solvus.

4,318,754

SURFACE TREATMENT METHOD FOR TIN-FREE STEEL

Norio Kosuge, Yokohama; Shunichi Tsugawa, and Hajima Kimura, both of Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Sep. 26, 1979, Ser. No. 79,207
Claims priority, application Japan, Oct. 3, 1978, 53-121655
Int. Cl.³ C23F *7/12*
U.S. Cl. 148—6.2 **2 Claims**



1. A surface treatment method for a tin-free steel surface having a hydrated chromic oxide layer, which comprises applying a water solution, containing as a first component a polymer obtained from one or two or more kinds of monomers of unsaturated carboxylic acids only and one or two or more members selected from the group consisting of water soluble carboxylic acids, organic phosphoric acid compounds, organic phosphorus acid compounds, sulfinic acid and its derivatives, sulfonic acid and its derivatives, or inorganic salts as a second component mixed with said first component, onto the surface of tin-free steel sheets conducting heating and drying.

4,318,755

ALUMINUM ALLOY CAN STOCK AND METHOD OF MAKING SAME

Paul W. Jeffrey, Kingston, Canada, and John C. Blade, Banbury, England, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed Dec. 1, 1980, Ser. No. 211,644
Int. Cl.³ C22F 1/04
U.S. Cl. 148—11.5 A 7 Claims

1. Can stock comprising cold-rolled sheet of an aluminum alloy consisting essentially of 0.45–0.8% Mn, 1.5–2.2% Mg, 0.1–0.25% Si, 0.3–1.0% Fe, up to 0.15% Cu, up to 0.05% Ti, up to 0.15% Cr, other elements up to 0.05% each and up to 0.1% total, balance Al, the combined content of Mn+Mg being not less than about 2.2% said sheet being directly formable by drawing and ironing, into a one-piece can body, and being at an intermediate temper, with the following properties: ultimate tensile strength, at least about 38 k.p.s.i.; yield strength, at least about 35 k.p.s.i.; elongation, at least about 1%; earing, not more than about 4%.

6. A process for making a can body comprising

(a) providing, at an intermediate temper, a cold-rolled can body blank of sheet aluminum alloy consisting essentially of 0.45–0.8% Mn, 1.5–2.2% Mg, 0.1–0.25% Si, 0.3–1.0% Fe, up to 0.15% Cu, up to 0.05% Ti, up to 0.15% Cr, other elements up to 0.05% each and up to 0.1% total, balance Al, the combined content of Mn+Mg being not less than about 2.2%, said sheet having the following properties: ultimate tensile strength, at least about 38 k.p.s.i.; yield strength, at least about 35 k.p.s.i.; elongation, at least about 1%; earing, not more than about 4%; and

(b) directly forming said blank into a one-piece can body by drawing and ironing.

4,318,756

MULTI-PHASE METALLIC SYSTEMS OF THE γ,γ', NBC TYPE WITH IMPROVED STRUCTURAL STABILITY

Herve Bibring, Meudon; Tasadduq Khan, Plessis Robinson; Maurice Rabinovitch, Chatillon; Jean-Francois Stohr, Bourg-la-Reine, and Jean-Michel Hauser, Meudon, all of France, assignors to Office National d'Etudes et de Recherches Aerospatiales O.N.E.R.A., Chatillon, France

Filed Nov. 13, 1979, Ser. No. 93,118
Claims priority, application France, Nov. 14, 1978, 78 32151
Int. Cl.³ C22C 19/05
U.S. Cl. 148—32.5 17 Claims

1. A refractory composite material adapted to be used in the manufacture of aviation turbine blades, and obtained by unidirectional solidification, with a nickel-based matrix hardened by at least one element including W in solid solution and hardened by precipitation from the matrix of a γ' $(Ni,Xi)_3(Al,Yi)$ phase, Xi representing elements different from Ni, and Yi representing elements different from Al and which can be respectively substituted for Ni and Al atoms in the formation of the γ' precipitate, and with aligned monocrystalline fibers of niobium monocarbide imbedded in said matrix, said material consisting essentially by weight of hardening elements

Co	0 to 20%,

selected from the group which consists of

W and Mo	7 to 14%,
Al	5 to 7%,
Nb	3.5 to 6%,
C	0.35 to 0.65%, and
Ni	balance to 100%

the chromium proportion being at most 8% by weight and being at a value less than that at which a chromium carbide of formula $Cr_{23}C_6$ can form in the matrix at the expense of the niobium monocarbide of the reinforcement fibers at the operating temperature foreseen for the material.

4,318,757

PROCESS FOR PRODUCING FERRO-MAGNETIC METAL PARTICLES

Rioichi Horimoto, Komoro, and Riyuuzou Seike, Saku, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed May 5, 1980, Ser. No. 146,878
Claims priority, application Japan, May 11, 1979, 54-58357; May 11, 1979, 54-58358
Int. Cl.³ H01F 1/02
U.S. Cl. 148—105 6 Claims

1. A process for producing ferromagnetic metal particles, which comprises heating starting material particles selected from the group consisting of the particles of oxides and hydroxides of ferromagnetic metals, in a reducing atmosphere at a temperature required for converting said particles into ferromagnetic metal particles of improved magnetic properties, characterized in that electrostatic charges are imparted to the material particles during said heat treatment, whereby aggregation of material particles is hindered during said treatment.

4. A process for heat-treating ferromagnetic metal particles, which comprises heating starting material particles selected from the group consisting of the particles of ferromagnetic metals and ferromagnetic alloys in a non-oxidizing atmosphere at a temperature required for converting said material particles into ferromagnetic metal particles of improved magnetic properties, characterized in that electrostatic charges are imparted to the material particles during said heat treatment, whereby aggregation of material particles is hindered during said treatment.

4,318,758

METHOD FOR PRODUCING A GRAIN-ORIENTED MAGNETIC STEEL SHEET HAVING GOOD MAGNETIC PROPERTIES

Katsuro Kuroki; Kenzo Iwayama, and Takashi Sato, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 896,359, Apr. 13, 1978, abandoned. This application Dec. 13, 1979, Ser. No. 103,565
Claims priority, application Japan, Apr. 18, 1977, 52/43482
Int. Cl.³ H01F 1/04
U.S. Cl. 148—111 4 Claims

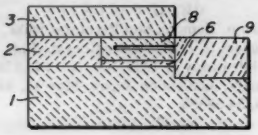
1. A method for producing a grain oriented magnetic steel sheet having excellent magnetic properties and containing not more than 4.5% silicon, comprising hot rolling a steel slab prepared by continuous casting, subjecting the hot rolled steel sheet thus obtained to intermediate annealing, then to cold rolling by means of a grooved roll to produce a steel structure in which a <001> axis of individual grains coincides with a rolling direction of the steel sheet, a crystal plane (h, k, o) parallel to the steel sheet surface plane is rotated and dispersed about an axis in the rolling direction in a range from 0° to ±20°, subjecting the cold rolled steel sheet thus obtained to decarburizing annealing, magnesium oxide coating, final annealing and then coating the steel sheet with a coating liquid containing colloidal silica, aluminum phosphate, chromic anhydride and boric acid so as to give a tension during cooling, ranging substantially from 350 to 1500 g/mm^2 in the rolling direction to the steel sheet.

4,318,759

RETRO-ETCH PROCESS FOR INTEGRATED CIRCUITS

Dale T. Trenary, San Jose; Allen H. Frederick, Pacifica, both of Calif., and Robert M. Whelton, Paradise Valley, Ariz., assignors to Data General Corporation, Westboro, Mass.

Filed Jul. 21, 1980, Ser. No. 170,833
Int. Cl.[3] H01L 21/22, 21/308
U.S. Cl. 148—187 21 Claims



10. A method of isolating active components within a silicon body comprising:

A. forming a silicon dioxide layer upon the silicon body;

B. forming a silicon nitride layer upon the silicon dioxide layer;

C. forming a retro-etched area by etching the silicon dioxide layer to a predetermined area under the silicon nitride layer;

D. forming an additional silicon nitride layer over the silicon body to substantially fill the retro-etched area;

E. removing the silicon nitride as applied in step D except in the retro-etched area;

F. forming a layer of silicon dioxide on the silicon body in areas not covered by silicon nitride;

G. removing all remaining silicon nitride;

H. etching any remaining silicon dioxide to expose the silicon body in the retro-etched area; and

I. etching the silicon body to form an isolation groove.

11. A method of forming a narrow doped region on a silicon body comprising:

A. forming a silicon dioxide layer upon the silicon body;

B. forming a silicon nitride layer upon the silicon dioxide layer;

C. forming a retro-etched area by etching the silicon dioxide layer to a predetermined area under the silicon nitride layer;

D. forming an additional silicon nitride layer over the silicon body to substantially fill the retro-etched area;

E. removing the silicon nitride as applied in step D except in the retro-etched area;

F. forming a layer of silicon dioxide on the silicon body in areas not covered by silicon nitride;

G. removing all remaining silicon nitride;

H. etching any remaining silicon dioxide to expose the silicon body in the retro-etched area; and

I. diffusing a dopant into the silicon body in the exposed retro-etched area.

4,318,760

SOLID PROPELLANT CONTAINING DIFERROCENYL KETONE

William D. Stephens, Vienna, and Charles I. Ashmore, Reva, both of Va., assignors to Atlantic Research Corporation, Alexandria, Va.

Filed Sep. 20, 1979, Ser. No. 77,438
Int. Cl.[3] C06B 45/10
U.S. Cl. 149—19.2 7 Claims

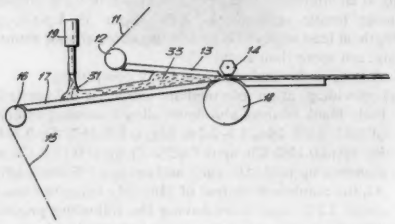
1. A solid propellant composition comprising an organic polymer fuel binder, an inorganic perchlorate oxidizer salt, and a minor proportion of 1,1'' -carbonyl-bis-ferrocene.

4,318,761

APPARATUS AND METHOD FOR THE CONTINUOUS MANUFACTURE OF FOAM BOARD

Edward Dockray, Greater Manchester, and Victor F. Hodgson, Manchester, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 21, 1980, Ser. No. 141,928
Claims priority, application United Kingdom, Nov. 22, 1979, 40419/79
Int. Cl.[3] B32B 31/20, 5/20
U.S. Cl. 264—46.2 6 Claims



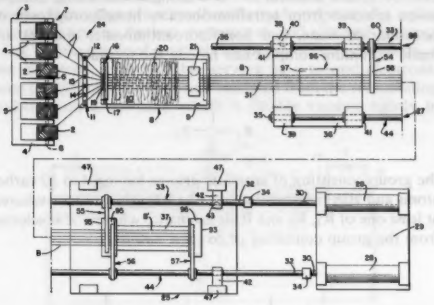
1. Apparatus for the continuous manufacture of foam board having a plastics foam core sandwiched between flexible facing sheets which comprises a conveyor assembly for continuously advancing upper and lower facing sheets in spaced opposed transversely-parallel disposition; a foam dispenser for depositing a liquid mixture of plastics foam-forming ingredients onto at least one of the facing sheets; a metering device for causing the facing sheets to converge into proximate relationship; and zones for the expansion and curing of the foam laminate; the metering device comprising two spaced opposed foam-constricting members forming therebetween a metering gap, at least one of the members having a plurality of faces of different profile and being rotatable to present to the other member a selected face appropriate to the thickness of foam board to be produced, the profiled faces being of a generally convex shape and the curvature of the profile varying from face to face to suit the thickness of foam board being produced.

6. Method for the manufacture of foam board consisting of a core of plastic foam, especially polyurethane or polyisocyanurate foam, sandwiched between two flexible facing sheets, the process comprising continuously advancing upper and lower facing sheets in spaced opposed transversely parallel disposition; depositing a liquid mixture of plastics foam-forming ingredients onto at least one of the facing sheets, usually the lower sheet, bringing the sheets into proximate relationship so that both sheets contact the foam-forming mixture; passing the sheets between foam-constricting members which form therebetween a metering gap so that the foam mixture is spread across the width of the sheets and fully occupies the space therebetween; and thereafter transporting the facing sheets while allowing the foam-mix to expand and cure; at least one of the foam-constricting members having a plurality of faces of different profile which member is rotated to present to the other member a selected face appropriate to the thickness of foam board to be produced, the profiled faces being of a generally convex shape and the curvature of the profile varying from face to face to suit the thickness of foam board being produced.

4,318,762
METHOD AND APPARATUS FOR SEQUENTIALLY FORMING A MOLDED PRODUCT

Leonard S. Meyer, Columbia, S.C., assignor to Victor United, Inc., Chicago, Ill.

Filed Apr. 21, 1980, Ser. No. 141,883
Int. Cl.[3] B29C 3/04; B29D 3/02
U.S. Cl. 156—180 20 Claims



1. The method of sequentially forming molded products comprising the steps of: feeding from a supply station a bundle including a running length of resin impregnated reinforcement, delivering said bundle from said supply station to a molding station by means of a pair of alternately reciprocating advancing mechanisms, each said advancing mechanism including a pair of spaced apart clamp assemblies each having two vertically aligned grip jaws operable to engage and release the full transverse extent of said bundle, reciprocating one said pair of clamp assemblies with said grip jaws closed to advance said bundle to said molding station from an area intermediate said supply station and molding station with said one pair of clamp assemblies straddling said mold station to position a segment of said bundle therewithin, concurrently reciprocating the other of said pair of clamp assemblies in an opposite direction with its respective said grip jaws opened and fully by-passing the closed grip jaws of said one pair of clamp assemblies, closing said grip jaws of said other pair of clamp assemblies upon said bundle in an area intermediate said supply and molding stations, operating said molding station to sever a segment from the remainder of said bundle and to form a molded product therein and ejecting the molded product from said molding station.

4,318,763
SEALING CROSS-LINKED THERMOPLASTIC MATERIALS

Anne C. Bieler, Mauldin, and Milton A. Howe, Jr., Spartanburg, both of S.C., assignors to W. R. Grace & Co., Duncan, S.C.

Continuation of Ser. No. 753,038, Dec. 22, 1976, Pat. No. 4,225,373. This application Sep. 15, 1980, Ser. No. 187,023
The portion of the term of this patent subsequent to Sep. 30, 1997, has been disclaimed.
Int. Cl.[3] B29D 17/00
U.S. Cl. 156—198 1 Claim

1. A method of making a flexible, heat shrinkable receptacle from thermoplastic film having improved high temperature seal strength comprising the steps of:

(a) selecting a thermoplastic film having at least one layer selected from the group consisting of polyethylenes and ethylene vinyl acetate copolymers which have been cross-linked by ionizing radiation, said film having a sealing surface wherein the material forming the surface is selected from the group consisting of polyethylenes and ethylene-vinyl acetate copolymers;

(b) orienting said film to render it heat shrinkable;

(c) placing said sealing surfaces in a face-to-face relationship;

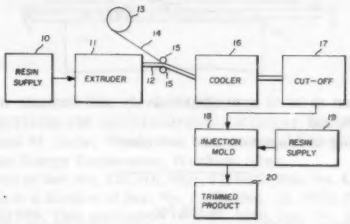
(d) heat sealing selected portions of said surface together to form a receptacle;

(e) irradiating said sealed together surfaces with ionizing radiation to a dosage level of at least 2 MR thereby increasing the high temperature strength of the seals of said heat shrinkable receptacle.

4,318,764
METHOD OF EXTRUSION/INJECTION MOLDING OF TRIMMED PRODUCT

Dick T. VanManen, Canandaigua, N.Y., assignor to Voplex Corporation, Pittsford, N.Y.

Filed May 5, 1980, Ser. No. 146,793
Int. Cl.[3] B29D 7/08
U.S. Cl. 156—244.11 10 Claims



1. A method of molding a product bearing a trim strip, said method comprising:

a. extruding a supporting base for said trim strip;

b. configuring said supporting base to have a substantially larger cross-sectional area than said trim strip and a mass and contour suitable for positioning within an injection mold cavity;

c. combining said trim strip with said supporting base;

d. using said contour of said supporting base to fit said supporting base against a corresponding contour within said mold cavity so that said supporting base positions and protects said trim strip within said mold cavity;

e. injection molding said product within said mold cavity; and

f. forming said product and said supporting base of resin materials that bond together during said injection molding step.

4,318,765
LAMINATE APPLYING MACHINE AND METHOD

Gilbert Fuchs; Norman Crowley, and Randall Wink, all of Evansville, Ind., assignors to Evana Tool & Engineering Co., Evansville, Ind.

Continuation-in-part of Ser. No. 181,698, Aug. 27, 1980. This application Aug. 28, 1980, Ser. No. 182,083
Int. Cl.[3] B32B 31/00
U.S. Cl. 156—256 26 Claims

1. A method for applying a laminate to a plate by using a walking beam assembly that includes a movable walking beam and a stationary rail, said walking beam having a forward movement, a downward movement, a rearward movement and an upward movement relative to said rail, said method comprising:

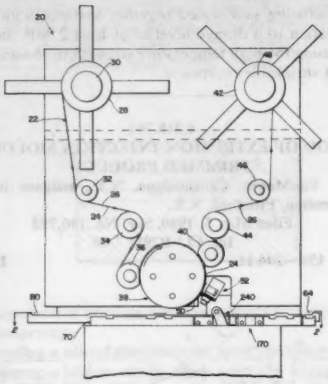
conveying said plate to an application position with said walking beam;

feeding an end of a laminate to said application position;

contacting and adhering one end of said plate to said laminate end;

moving said walking beam to cause relative contact between

said adhering plate and laminate ends and a contact member and to cause relative longitudinal movement therebe-



tween so as to apply successively said laminate to said plate; and

adhering said laminate onto said plate.

4,318,766

PROCESS OF USING PHOTOCOPOLYMERIZABLE COMPOSITIONS BASED ON EPOXY AND HYDROXYL-CONTAINING ORGANIC MATERIALS

George H. Smith, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 609,898, Sep. 2, 1975, Pat. No. 4,256,828.
This application Feb. 17, 1981, Ser. No. 234,835
Int. Cl.[3] G03C 5/00; B32B 27/38; B05D 3/06; C09J 5/00
U.S. Cl. 156—330 6 Claims

1. A process for obtaining a cured coating comprising:

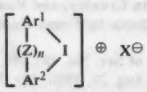
(a) providing a photocopolymerizable composition comprising:

(i) a first organic material having epoxide functionality greater than about 1.5;

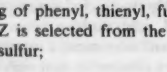
(ii) a second organic material having aliphatic hydroxyl functionality of at least 1; said material being free of other active hydrogens and being free of epoxide groups; and

(iii) a complex salt photoinitiator selected from the group consisting of:

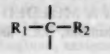
(1) aromatic iodonium complex salts having the formula



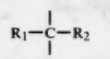
where Ar^1 and Ar^2 are aromatic groups having 4 to 20 carbon atoms and are selected from the group consisting of phenyl, thienyl, furanyl and pyrazolyl groups; Z is selected from the group consisting of oxygen; sulfur;



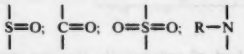
R-N where R is aryl or acyl; a carbon-to-carbon bond; or



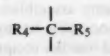
where R_1 and R_2 are selected from hydrogen; alkyl radicals of 1 to 4 carbons, and alkenyl radicals of 2 to 4 carbons; and n is zero or 1; and wherein X^- is a halogen-containing complex anion selected from tetrafluoroborate, hexafluorophosphate, hexafluoroarsenate, and hexafluoroantimonate; and (2) aromatic sulfonium complex salt having the formula



the group consisting of aromatic groups having 4 to 20 carbon atoms and alkyl radicals having 1 to 20 carbon atoms; wherein at least one of R_1, R_2 and R_3 is aromatic; wherein Z is selected from the group consisting of oxygen; sulfur;



where R is aryl or acyl; a carbon-to-carbon bond; or



where R_4 and R_5 are selected from the group consisting of hydrogen, an alkyl radical having 1 to 4 carbon atoms, and an alkenyl radical having 2 to 4 carbon atoms; and n is zero or 1; and X is a halogen-containing complex anion selected from tetrafluoroborate, hexafluorophosphate, hexafluoroarsenate, and hexafluoroantimonate;

wherein the ratio of hydroxyl equivalents in said second organic material to epoxide equivalents in said first organic material is in the rane of 0.001/1 to 10/1; and wherein said photoinitiator is present in said composition in an amount of about 0.1 to 30 parts by weight per 100 parts by weight of combined first and second organic materials;

(b) applying a thin layer of said composition to a substrate, and

(c) exposing said layer to actinic radiation or electron beam irradiation.

4,318,767

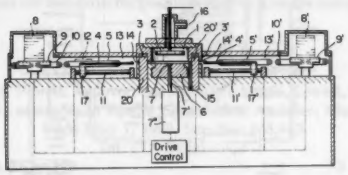
APPARATUS FOR THE TREATMENT OF SEMICONDUCTOR WAFERS BY PLASMA REACTION

Isamu Hijikata, Tokyo; Akira Uehara, Yokohama, and Hisashi Nakane, Kawasaki, all of Japan, assignors to Tokyo Ohka Kogyo Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 20, 1980, Ser. No. 208,845
Claims priority, application Japan, Nov. 27, 1979, 54-163233[U]
Int. Cl.[3] C23F 1/02
U.S. Cl. 156—345 7 Claims

1. An apparatus for the treatment of semiconductor wafers by plasma reaction, which apparatus comprises a first wafer carrying means for a wafer to be treated which comprises a first conveyer for carrying the wafer to be treated, a second conveyer for carrying the wafer to be treated and disposed adjacent to said first conveyer, and a first arm type wafer

carrying means, said first arm type wafer carrying means essentially consisting of a pair of guide rails, a pair of sliders slidably mounted on said guide rails respectively in the horizontal direction, and a pair of first arms for carrying the wafer to be treated, said first arms extending horizontally along said second conveyer and being shaped to be a pair of parallel rods spaced at a certain distance to each other with a certain length to be movable horizontally with said sliders; a reaction chamber provided with a pair of slits for taking the wafer to be treated into said reaction chamber or for taking a treated wafer out of said reaction chamber therethrough, respectively, a pair of vacuum sealing devices mounted on said slits and incorporating therein a pair of gate valve type shutters, respectively, a first electrode, a wafer table serving as a second electrode, faced to said first electrode and insulated from the surrounding environment, a sub-table which is fittable vacuum-tightly in



the center of said wafer table along with a shaft integral therewith and is vertically movable by an elevator cylinder, a plasma gas nozzle, and a vacuum line; a second wafer carrying means for a treated wafer which comprises a second arm type wafer carrying means essentially consisting of a pair of guide rails, a pair of sliders slidably mounted on said guide rails respectively in the horizontal direction, and a pair of second arms for carrying the treated wafer, said second arms extending horizontally along a third conveyer for carrying the treated wafer and being shaped to be a pair of parallel rods spaced at a certain distance to each other with a certain length to be movable horizontally with said sliders; a third conveyer for carrying the treated wafer, and a fourth conveyer for carrying the treated wafer and disposed adjacent to said third conveyer; and a control means for driving said first wafer carrying means, said reaction chamber, and said second wafer carrying means in linkage motion.

4,318,768

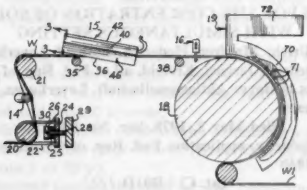
SLIT-SEALING APPARATUS FOR HIGH-DENSITY PLASTIC SHEETS

James R. Johnson, 3819 Greenhill Dr., Chamblee, Ga. 30341

Continuation-in-part of Ser. No. 118,499, Feb. 4, 1980. This application Oct. 24, 1980, Ser. No. 200,393

Int. Cl.³ B32B *31/18, 31/26*

U.S. Cl. 156—494 **5 Claims**



1. Apparatus for slit-sealing high density plastic sheets including means for holding said plastic sheets in a generally flat web, knife means engaging said web, and tensioning means for maintaining said web in tension, said knife means including a knife body, and an elongate knife blade fixed to said body and having a sharp edge, a first end of said sharp edge being above said web and a second end of said sharp edge being below said web, so that said elongate knife blade passes through the plane of said web for slitting said web, and said sharp edge forms an acute angle with the upper surface of said web, and heating means for heating said knife means sufficiently that said web is sealed while in engagement with said knife blade, said means for holding said plastic sheets in a generally flat web including a plurality of rollers, a first roller and a second roller of said plurality of rollers having tangents defining the plane of said web, a third roller of said plurality of rollers being adjacent to said first roller and spaced from said plane of said web, said tensioning means including braking means on at least one roller of said first roller and said third roller, said tensioning means further including a tensioning bar located between said first roller and said third roller, said tensioning bar being located to deflect said plastic sheets to increase the tension, said tensioning bar being curvilinear for deflecting some portions of said web more than other portions of said web, said some portions of said web being aligned with said knife means.

4,318,769

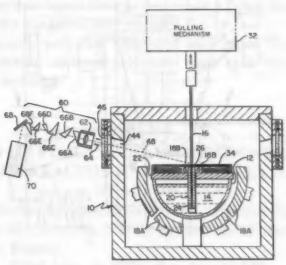
METHOD OF MONITORING CRYSTAL GROWTH

Emanual M. Sachs, Watertown, Mass., assignor to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Division of Ser. No. 130,816, Mar. 17, 1980, Pat. No. 4,277,441, which is a division of Ser. No. 3,278, Jan. 15, 1979, Pat. No. 4,242,589. This application Oct. 27, 1980, Ser. No. 201,042

Int. Cl.³ G05D *5/00*

U.S. Cl. 156—601 **3 Claims**



1. A process for monitoring the growth of a crystalline body of selected material from a growth pool of melt so that said body has a selected cross-sectional shape for some preselected distance along its length, said growth pool being characterized by a meniscus which joins said body at said growth pool to form a solid/liquid/vapor junction, said method comprising the steps of:

providing said growth pool of melt of said selected material;

growing said crystalline body from said growth pool of melt;

forming an image including said junction and the portions of said body and meniscus adjacent said junction, said image being anamorphic so that the entire width dimension of said junction can be observed and said height dimension is enlarged with respect to the width dimension of said image;

generating an analog video signal representative of said image;

digitizing the analog video signal so as to produce a digitized video signal; and

displaying said image responsively to said digitized signal;

wherein digitizing said analog video signal enhances the contrast of the displayed image.

4,318,770

SURFACE ETCHING BEFORE ELECTRODING ZIRCONIA EXHAUST GAS OXYGEN SENSORS

Thomas Chakupurakal, St. Clair Shores, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 13, 1980, Ser. No. 177,561
Int. Cl.[3] C23F 1/00
U.S. Cl. 156—637 3 Claims

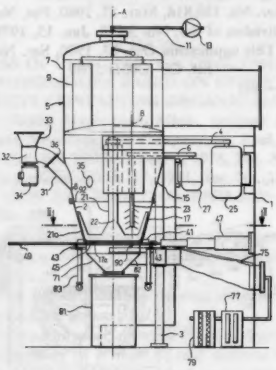
1. A method of substantially increasing porosity on a polycrystalline zirconia surface comprising etching the zirconia surface with an etchant consisting essentially of concentrated hydrofluoric acid and concentrated sulfuric acid in a ratio effective to not only rapidly etch grain boundaries but to also rapidly etch individual zirconia grains and thereby provide relatively large pores between the grains and small pores on the grains.

4,318,771

DEVICE FOR THE FORMATION OF GRANULATED OR AGGLOMERATED SUBSTANCES

Erwin Grab, Rummingen, and Werner Glatt, Binzen, both of Fed. Rep. of Germany, assignors to Glatt Maschinen-und Apparatebau AG, Pratteln, Switzerland

Filed Jul. 16, 1980, Ser. No. 169,466
Int. Cl.[3] B01D 1/14
U.S. Cl. 159—16 R 8 Claims



1. A device for the formation of granulated or agglomerated substances, said device comprising:

container means having a top portion and an open bottom and adapted to receive at least one solid substance and at least one liquid substance;

a first bottom member for closing off the open bottom of said container means;

a second bottom member having a plurality of gas passage openings;

mounting means for detachably mounting said first and second bottom members in horizontal engagement with said open bottom;

stirring means disposed in said container means for mixing said substances;

flowing means for introducing an upward flowing gas through said open bottom of said container means, said gas, when flowing upward, causing said substances to be dried by whirling within said container means; and

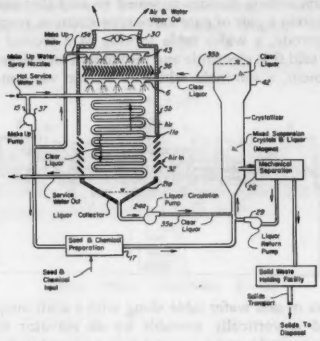
a third bottom member having a passage screen with openings of larger size than the gas openings of said second bottom member, said third bottom member capable of being positioned under said open bottom of said container means so that the mixed substances can be shifted through said third bottom member after whirling.

4,318,772

SATURATED LIQUOR COOLING TOWER

Loren G. Kragh, 28903 8th Ave. South, Federal Way, Wash. 98003

Continuation-in-part of Ser. No. 789,449, Apr. 20, 1979, abandoned, which is a continuation-in-part of Ser. No. 381,340, Jul. 20, 1973, Pat. No. 4,019,951. This application Aug. 16, 1979, Ser. No. 67,042
Int. Cl.[3] B01D 1/18
U.S. Cl. 159—45 5 Claims



1. Apparatus for simultaneously rejecting industrial waste heat and for removing dissolved solids from water, comprising in combination:

means forming a first loop having an input for circulating water containing dissolved solids, including ambient air contact evaporator means and crystallizer means in series;

means introducing crystal nuclei into said first loop upstream from said crystallizer means for forming a magma within said crystallizer means;

decanting means included in said crystallizer means for decanting liquor from the mixed suspension of crystals and liquor;

separating means connected to a lower portion of said crystallizer means for separating crystalline solids from the magma therein contained;

means forming a second loop containing liquid of a higher temperature than the circulating water in the said first loop, and having a source of heat energy; and

heat exchanger means between said first and second loop for transferring sensible heat to the circulating water in the first loop.

4,318,773

PROCESS FOR THE CONCENTRATION OF SOLUTIONS WITH SIMULTANEOUS SETTING

Martin Ullrich; Manfred Hederich, both of Leverkusen, and Karl-Friedrich Jerchel, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 2, 1978, Ser. No. 902,190
Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2721848
Int. Cl.[3] B01D 1/22
U.S. Cl. 159—47 R 11 Claims

1. A process for the continuous concentration of liquid solutions, comprising the steps of:

providing a screw evaporator with a closed housing zone having a discharge outlet;

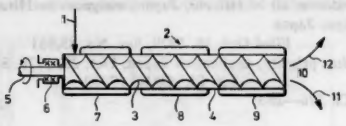
feeding a liquid solution into the screw evaporator;

concentrating the liquid solution by evaporation in the closed housing zone;

converting the liquid solution into the solid phase by further concentration in the closed housing zone;

crushing the solid phase into a flowable solid material in the closed housing zone;

conveying the vapors released during the concentrating,



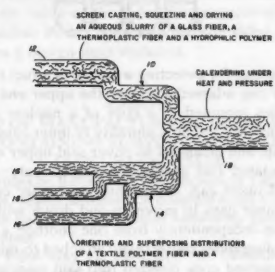
converting and crushing steps with the material unidirectionally towards the discharge outlet; and

discharging the vapors along with the crushed solid material from the same discharge outlet of the closed housing zone.

4,318,774
COMPOSITE NONWOVEN WEB

Henry J. Powell, Andover, and Albert G. Hoyle, Lowell, both of Mass., assignors to Powell Corporation, Andover, Mass.

Filed May 1, 1980, Ser. No. 145,463
Int. Cl.³ D21H *1/02*
U.S. Cl. 162—129 **3 Claims**


SCREEN CASTING, SQUEEZING AND DRYING AN AQUEOUS SLURRY OF A GLASS FIBER, A THERMOPLASTIC FIBER AND A HYDROPHILIC POLYMER
12
10
CALENDERING UNDER HEAT AND PRESSURE
18
16
14
16
ORIENTING AND SUPERPOSING DISTRIBUTIONS OF A TEXTILE POLYMER FIBER AND A THERMOPLASTIC FIBER

1. A process for producing a composite sheet, said process comprising the steps of:

(a) forming a first stratum by screen casting and drying an aqueous slurry containing a distribution of glass fiber, thermoplastic fiber and hydrophilic polymer, said glass fiber and said thermoplastic fiber in said first stratum being bonded by said hydrophilic polymer;

(b) forming a second stratum by orienting a distribution of a textile polymer fiber and a thermoplastic fiber, said polymer fiber and said thermoplastic fiber in said second stratum being bonded by matting;

(c) said thermoplastic fiber of said first stratum and said thermoplastic fiber of said second stratum being compatible;

(d) calendering said first stratum and said second stratum in superposition under heat and pressure to fuse said thermoplastic fiber of said first stratum and said thermoplastic fiber of said second stratum;

(e) said first stratum, by total weight, containing a glass fiber to textile polymer fiber ratio of (from 40 to 94%) divided by (from 5 to 50%);

(f) said second stratum, by total weight, containing from 10 to 90% textile polymer fiber and from 10 to 90% thermoplastic fiber;

(g) said textile polymer fiber being composed of a material selected from the class consisting of polyesters, polyamides, polyvinyls, polyolefins, polyacrylics, and cellulosics;

(h) said thermoplastic fiber having a fusion point within the range of 200° to 450° F.;

(i) said textile polymer fiber and said glass fibers having fusion points above said thermoplastic fibers.

3. A composite sheet structure comprising:

(a) a first cohesive stratum and a second cohesive stratum;

(b) said first cohesive stratum containing a discrete distribution of nonwoven glass fiber and a discrete distribution of a hydrophilic polymer;

(c) said second cohesive stratum being composed of a plurality of layers, each containing a discrete distribution of nonwoven textile polymer fiber and being cohesive by the temporary matting of said fibers;

(d) said first cohesive stratum and said second cohesive stratum containing a distribution of nonwoven thermoplastic fibrous material, of which part is interspersed with said glass fiber and part is interspersed with said textile polymer fiber;

(e) said discrete distribution of said hydrophilic polymer binding said nonwoven glass fiber and said nonwoven thermoplastic fibrous material into said first cohesive stratum;

(f) said glass fiber, said textile polymer fiber, and said thermoplastic fibrous material being locked in position within said composite sheet structure between said first and second cohesive stratums and also within each of said first and second cohesive stratums primarily by fusion of said thermoplastic fibrous material to said glass fiber and to said textile polymer of said first and second cohesive stratums;

(g) said first stratum, by total weight, containing a glass fiber to textile polymer fiber ratio of (from 40 to 94%) divided by (from 5 to 50%);

(h) said second stratum, by total weight, containing from 10 to 90% textile polymer fiber and from 10 to 90% thermoplastic fibrous material;

(i) said textile polymer fiber being composed of a material selected from the class consisting of polyesters, polyamides, polyvinyls, polyolefins, polyacrylics, and cellulosics;

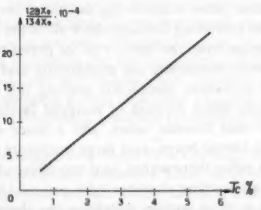
(j) said thermoplastic fibrous materials having fusion points within the range of 200° to 450° F.;

(k) said textile polymer fiber and said glass fibers having fusion points distinctly higher than said thermoplastic fibrous material.

4,318,775
METHOD OF FUEL CAN FAILURE LOCATION IN A NUCLEAR REACTOR AND ESPECIALLY A FAST REACTOR

Claude M. Berlin, Chemin de la Source, Quartier Saint Alban, and Pierre M. Chantoin, No. 18, rue du Fenouil, both of 04100 Manosque, France

Filed Mar. 6, 1979, Ser. No. 17,844
Claims priority, application France, Mar. 10, 1978, 78 07231
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—253 **1 Claim**



1. A method of fuel can failure location in the case of fuel elements constituting a nuclear reactor core in which a fission reaction takes place, location being performed by measuring the age of the faulty fuel element, wherein said method consists in determining the ratio between two fission products constituted by two stable gaseous isotopes of xenon having different kinetics of formation of available gas as a function of the specific burn-up of said fuel assemblies, one of the stable gaseous

isotopes being selected from a first group consisting of Xe^{128} and Xe^{130}, and the other of the stable gaseous isotopes being selected from a second group consisting of Xe^{131}, Xe^{132}, Xe^{134} and Xe^{136}.

4,318,776

MEASURING LANCE FOR BOILING-WATER NUCLEAR REACTORS

Norbert Pröll, Dreieich; Siegfried Bertz, Karlstein, and Karl-Heinz Gräbener, Alzenau, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Jul. 18, 1979, Ser. No. 58,474

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832122

Int. Cl.³ G21C *17/00*

U.S. Cl. 376—254 7 Claims

1. A measuring lance forming part of the core instrumentation of a boiling-water nuclear reactor and extending from the bottom of a reactor pressure vessel through the core in a water gap between the fuel assemblies of the core, the lance having a plurality of radiation detectors respectively located at different height levels thereof, and further containing a travelling chamber system movable from height level to height level of the lance for calibrating the detectors and continuously determining neutron flux distribution, the improvement therein comprising thimble tubes wherein the detectors are received, said thimble tubes extending through the wall of the pressure vessel and being sealed from the interior of the pressure vessel, means for individually displacing and exchanging said detectors during reactor operation, means for cooling the detectors, said cooling means being formed of material facilitating heat removal from said thimble tubes, and a lance enclosure tube formed with lateral bores, said large enclosure tube receiving said thimble tubes therewithin, said travelling chamber system comprising a travelling chamber tube, and said lance enclosure tube having a cross section matching the shape of the water gap between four of the fuel assemblies of the core disposed symmetrically to one another, four of said thimble tubes and said travelling chamber tube disposed centrally thereof being received in said lance enclosure tube and forming a structural unit therewith, said structural unit being releasably connected pressure-tightly to the base of the pressure vessel, said structural unit being withdrawable upwardly for replacement during reactor shutdown and when the pressure-vessel cover is opened.

4,318,777

APPARATUS FOR DETECTING FAILURE OF THE NUCLEAR FUEL ROD

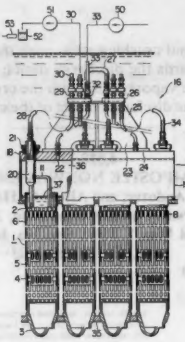
Takeshi Sujumura; Shozo Saito; Takashi Saito, and Hiromasa Hirakawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 18, 1979, Ser. No. 85,951

Claims priority, application Japan, Oct. 20, 1978, 53/128505

Int. Cl.³ G21C *17/00*

U.S. Cl. 376—253 6 Claims



1. An apparatus for detecting a failure of a fuel rod comprising: an outer cap adapted to cover the upper end portions of fuel assemblies mounted in a core of a nuclear reactor and containing therein coolant; a plurality of inner caps disposed in said outer cap, and arranged to cover said upper end portions of said associated fuel assemblies, respectively; means, disposed in said outer cap, for guiding said inner caps so as to enable said inner caps to move up and down with respect to said outer cap independently from one another; a plurality of coolant sampling tubes respectively attached to said inner caps and having opened ends inserted into said associated fuel assemblies; sucking means, attached to said coolant sampling tubes, for sucking coolant from said fuel assemblies; a gas supplying pipe connected to said outer cap and opening to a space defined by the surface of said outer cap confronting said fuel assemblies, and means for supplying a gas to said gas supplying pipe.

4,318,778

METHOD AND APPARATUS FOR CONTROLLING A NUCLEAR REACTOR

Charles R. Musick, Vernon, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 22, 1973, Ser. No. 362,698

Int. Cl.³ G21C *7/36*

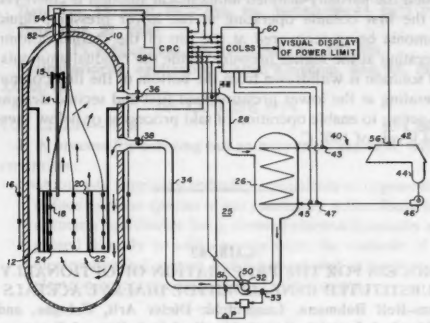
U.S. Cl. 376—216 44 Claims

1. An improved Nuclear Power System fuel damage protection apparatus for the prevention of the violation of a fuel design limit, said apparatus being of the type which utilizes an index which is representative of the proximity of the violation of said design limit, said index being mathematically represented by an equation which defines the functional relationship between said index and a multiplicity of system parameters, said apparatus including means for continuously generating a multiplicity of electrical signals which each vary as a function of one of said multiplicity of system parameters and means responsive to said multiplicity of electrical signals for periodically sampling said signals and for periodically generating an electrical signal commensurate with said index of said system at the time of said sampling, the improvement comprising:

a. means responsive to said sampled parametric signals and to said continuously generated parametric signals for continuously generating an index update electrical signal

commensurate with the change of index which occurs after said sampling;

b. means responsive to said signal commensurate with the index of said system at the time of said sampling and to said index update signal for summing said signal to contin-



uously generate an electrical signal commensurate with an up-to-date value of the index of said systems; and

c. means responsive to the signal commensurate with the up-to-date value of the index for correctively regulating said Nuclear Power System when the value of the index indicates a design limit violation.

4,318,779

METHOD OF MANUFACTURE OF BLAST FURNACE COKES CONTAINING SUBSTANTIAL AMOUNTS OF LOW GRADE COALS

Michio Tsuyuguchi; Keiji Kubo, and Hiromichi Takahashi, all of Wakayama, Japan, assignors to Sumikin Coke Company Ltd., Wakayama and Sumitomo Metal Industries Limited, Osaka, both of, Japan

Filed May 12, 1980, Ser. No. 148,943

Claims priority, application Japan, May 14, 1979, 54-59258; Mar. 19, 1980, 55-35479

Int. Cl.[3] **C10B** *53/00, 53/08, 55/02, 57/04*

U.S. Cl. 201—6 **8 Claims**

1. A method of preparing an effective blast furnace coke which contains substantial amounts of low grade coal, said method comprising the steps of

(a) mixing together an amount of coking coal and an amount of low grade coal to form a first blended coal mixture; said amount of coking coal comprising not less than 80% by weight of the weight of the first blended coal mixture and said amount of low grade coal comprising not more than 20% by weight of the weight of the first blended coal mixture,

(b) adjusting the moisture content of the first blended coal mixture obtained in step (a) to 4% or less,

(c) mixing together an amount of coking coal, an amount of low grade coal and an amount of an additive material selected from the group consisting of binding substances and caking substances to form a second blended coal mixture; said amount of coking coal comprising not less than 10% by weight of the weight of the second blended coal mixture and said amount of low grade coal comprising not more than 90% by weight of the weight of the second blended coal mixture,

(d) forming uniformly shaped briquettes from the second blended coal mixture obtained in step (c),

(e) mixing an amount of the briquettes formed in step (d) with an amount of the moisture content-adjusted first blended coal mixture formed in step (b) to form a third blended coal mixture; said amount of briquettes comprising not more than 40% by weight of the weight of the third blended coal mixture and said amount of moisture content-adjusted first blended coal mixture comprising not less than 60% by weight of the weight of the third blended coal mixture, and

(f) carbonizing the third blended coal mixture to form the blast furnace coke.

4,318,780

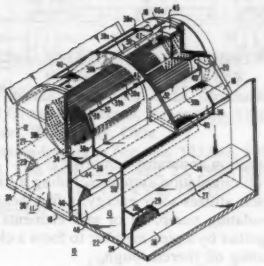
MULTI-STAGE FLASH EVAPORATOR DESIGN

Robert E. Bailie, Fort Lauderdale, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 967,822, Dec. 8, 1978, abandoned. This application Jul. 3, 1980, Ser. No. 165,885

Int. Cl.[3] **B01D** *3/02, 3/10*

U.S. Cl. 202—172 **14 Claims**



1. A multistage flash evaporator unit comprising structure defining a pair of flash evaporator chambers in series feed flow communication, said structure comprising:

means defining a generally elongated enclosure having opposed sides defining the elongated dimension, opposed end walls and opposed top and bottom members;

a dividing wall disposed in the upper portion of said enclosure generally intermediate and parallel to said opposed end walls and in sealing relationship with said top member;

an intermediate wall member extending between said opposed end walls to separate said enclosure into an upper condenser portion and a lower evaporator portion, and cooperatively associated with said dividing wall to provide a pair of separate condenser chambers in said upper condenser portion;

condenser means comprising an array of heat exchanger tubes extending between said opposed end walls in said upper condenser portion, said tubes projecting through and in generally sealing engagement with apertures in said dividing wall;

a partitioning wall extending between said opposed end walls in said lower evaporator portion and generally parallel to and midway between said opposed sides and sealingly engaging said intermediate wall member to define a pair of evaporator chambers in said lower evaporator portion extending the full length of said unit;

said side walls and said evaporation chamber partitioning wall each defining a fluid flow inlet adjacent said bottom member and extending generally throughout the length of said unit;

first means defining a first vapor flow opening exclusively to one of said condenser chambers from one of said evaporator chambers and second means defining a second vapor flow opening exclusively to the other of said condenser chambers from the other of said evaporator chambers;

baffle means in each condenser chamber and disposed in said condenser tube array to direct the vapor in a path therethrough;

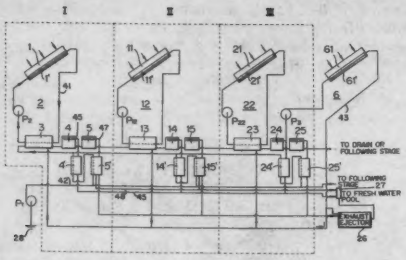
means for venting the non-condensed vapors of said first condenser chamber into said second condenser chamber; and,

means for venting the non-condensed vapors of said second condenser chamber from said unit.

4,318,781
DESALINAZATION APPARATUS

Tomimaru Iida, 5-20-11, Todoroki, Setagaya-ku, Tokyo, Japan

Filed Jan. 11, 1980, Ser. No. 111,331
Int. Cl.[3] C02F *1/14*
U.S. Cl. 202—173 11 Claims



1. A desalinazation apparatus comprising:

at least one oil circulation system including a first heat collector which utilizes solar energy, a first heat exchanger and a circulating pump, all of said elements being connected together by a pipe member to form a closed circuit for circulating oil therethrough,

at least one sea water system including second heat exchanger connected in series by a pipe member on the upstream side of said first heat exchanger and a distillator connected by a pipe member to the downstream side of said first heat exchanger and a pump means for conveying sea water through said second exchangers and into indirect heat exchange relationship with said oil circulation system in said first heat exchanger,

means for removing the treated sea water from said distillator,

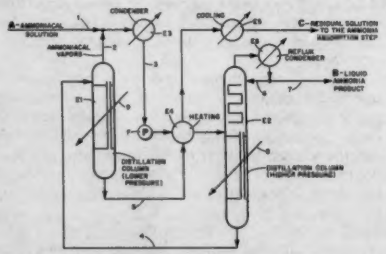
means for removing fresh water from said distillator, and

a gas supplying system for supplying gas to said first heat exchanger including a second heat collector, means for introducing at least a portion of said gas into said second heat collector to circulate said gas therein, and means for conveying said gas to said first heat exchanger for supplying additional heat and obtaining a bubble disturbance effect therein.

4,318,782
PROCESS FOR DISTILLING AMMONIACAL SOLUTIONS

Giorgio Pagani, Milan, and Fabrizio Socci, Peschiera Borromeo, both of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jan. 6, 1981, Ser. No. 222,989
Claims priority, application Italy, Jan. 8, 1980, 19075 A/80
Int. Cl.[3] B01D *3/28*
U.S. Cl. 203—12 6 Claims



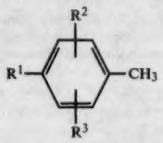
1. A process for distilling ammoniacal solutions, comprising, providing a first column of a first design and a second column of a second design, each operating at different pressures, the ammoniacal solution to be distilled being sent, after being mixed with the ammoniacal vapors flowing from the top of the first column operating at the lower pressure, to the second column operating at the higher pressure, from the bottom of which the partially-distilled ammoniacal solution is conveyed to the first column operating at the lower pressure; liquid ammonia being recovered at the top of the second column operating at the higher pressure, while the residual ammoniacal solution is withdrawn from the bottom of the first column operating at the lower pressure; said first and second designs co-acting to enable operation of said process at or below thermal levels of 140° C.

4,318,783
PROCESS FOR THE PREPARATION OF OPTIONALLY SUBSTITUTED BENZALDEHYDE DIALKYL ACETALS

Hans-Rolf Buhmann, Langenfeld; Dieter Arlt, Cologne, and Manfred Jautelat, Burscheid, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 14, 1979, Ser. No. 94,132
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851732; Jun. 9, 1979, 2923531; Jul. 27, 1979, 2930480
Int. Cl.[3] C25B *3/02*
U.S. Cl. 204—59 R 11 Claims

1. A process for the preparation of optionally substituted benzaldehyde dialkyl acetal which comprises subjecting a toluene of the formula



wherein

R^1 denotes hydrogen, alkyl, aryl, aralkyl, alkoxy, aryloxy or aralkoxy and

R^2 and R^3 which can be the same or different represent hydrogen, alkyl, aryl or aralkyl, dissolved in an alcohol of the formula

$$R^4—OH$$

wherein

R^4 denotes alkyl

in the presence of a conducting salt of the formula

$$R^7—B—O—N—(alkyl)_4$$

in which

B represents

$$—SO_2— \quad \text{or} \quad —PO—\ (R^8)$$

R^7 denotes methyl, ethyl, methoxy, ethoxy or phenyl optionally substituted by alkyl and/or halogen and

R^8 represents methoxy or ethoxy

to an electrochemical oxidation employing a current density of 0.1 to 50 A/dm^2 employing an oxidation-resistant anode.

4,318,784

ENZYMATIC PROCESSES

Irving J. Higgins, Wingham, and Hugh A. O. Hill, Oxford, both of England, assignors to National Research Development Corporation, London, England

PCT No. PCT/GB79/00139, § 371 Date Apr. 15, 1980, § 102(e) Date Apr. 15, 1980, PCT Pub. No. WO80/00453, PCT Pub. Date Mar. 20, 1980

PCT Filed Aug. 10, 1979, Ser. No. 192,504

Claims priority, application United Kingdom, Aug. 15, 1978, 33388/78

Int. Cl.³ C25B *3/04*

U.S. Cl. 204—73 R 13 Claims

1. A process for carrying out an enzymatic reaction, which comprises:

continuously supplying reducing equivalents to regenerate a reduce enzyme species in enzymatically active form, said reducing equivalents being derived electrochemically and passed directly to said enzyme from the cathode of an electrochemical system and taken-up and utilized by an electron receptor component of said enzyme.

4,318,785

METHOD OF BONDING CATION EXCHANGE MEMBRANE OF FLUORINATED POLYMER

Tomoki Gunjima, and Isamu Takeshita, both of Yokohama, Japan, assignors to Ashai Glass Company, Limited, Tokyo, Japan

Division of Ser. No. 907,202, May 18, 1978, Pat. No. 4,206,022. This application Aug. 9, 1979, Ser. No. 65,341

Claims priority, application Japan, May 24, 1977, 52-59345

The portion of the term of this patent subsequent to Sep. 30, 1997, has been disclaimed.

Int. Cl.³ B29H *19/00;* C09J *5/00;* C25B *1/46*

U.S. Cl. 204—98 1 Claim

1. In a method for melt bonding a cation exchange membrane comprising a fluorinated copolymer containing $(COO)_mX$ groups as the ion exchange groups, wherein X is an alkali metal, alkaline earth metal or $NHR_1R_2R_3$ wherein R_1, R_2 and R_3 represent hydrogen or a lower alkyl group and m is the valence of X; the improvement which comprises converting said $(COO)_mX$ groups to —COOY groups, prior to melt bonding, wherein Y represents a C_1–C_{20} alkyl group, wherein the viscosity of the molten portion of the membrane during melt bonding is from 10^2 to 10^6 poises, and wherein the cation exchange membrane is melt-bonded for repairing pin-hole, peeling or breaking of the cation exchange membrane of the fluorinated polymer.

4,318,786

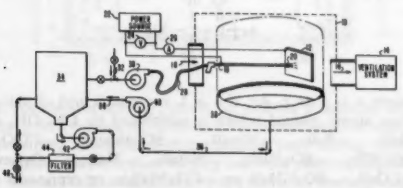
ELECTROLYTIC DECONTAMINATION

Edward J. Lahoda, Edgewood; David A. Eckhardt, Penn Hills, both of Pa., and Donald L. Grover, Richland, Wash., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 10, 1980, Ser. No. 128,771

Int. Cl.³ C25F *1/04, 3/14, 5/00*

U.S. Cl. 204—141.5 10 Claims



1. A method for electrolytically decontaminating components comprising:

arranging a wand near the component to be decontaminated for conducting an electrolyte solution to said component;

maintaining the end of said wand approximately 0.20 to 0.30 inches from the surface of said component;

conducting said electrolyte solution through said wand and onto said component;

conducting an electrical current from said wand, through said electrolyte solution, and through said component; and

moving said wand along said component so that no portion of said component is exposed to said electrolyte solution for more than approximately 5 seconds for removing the contaminated oxide layer from said component without damaging the metal surface of said component.

4,318,787

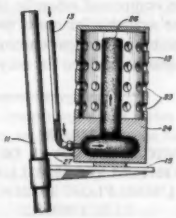
SACRIFICIAL ANODE COMPOSITION IN CATHODIC PROTECTION PROCESS

Marvin L. Peterson, Ponca City, Okla.; Charles F. Putnik, Katy, Tex., and Orwin G. Maxson, Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 123,863, Feb. 22, 1980, abandoned. This application Aug. 22, 1980, Ser. No. 180,235

Int. Cl.³ C23F *13/00*

U.S. Cl. 204—147 9 Claims



6. An improved cathodic protective apparatus for use on a steel offshore structure, said apparatus comprising:

(a) a perforated subsurface container containing a composition which comprises a major amount of anode material in particulate form and a minor amount of a thixotropic carrier material,

(b) a source of supply for said composition,

(c) a conduit running from said source of supply to said subsurface container, and

(d) means for feeding the composition to the container in response to the electrochemical potential requirement of the structure being protected, said apparatus being characterized further in that it is electrically connected to the steel offshore platform.

4,318,788

CHROMATE RECOVERY PROCESS

Joseph G. Duffey, Williamsville, N.Y., assignor to ANDCO Environmental Processes, Inc., Buffalo, N.Y.

Filed Dec. 12, 1979, Ser. No. 102,937

Int. Cl.³ C02F *1/46;* C01G *37/02*

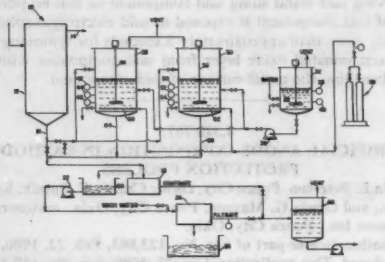
U.S. Cl. 204—149 7 Claims

1. In a process for recovering contaminating hexavalent chromium ions electrochemically removed from an aqueous medium by forming an insoluble iron compound or complex therewith which process comprises passing an electric current through the aqueous medium containing the contaminating ions between an anode which has a surface or a portion of a surface thereof of iron, iron alloy, or insoluble iron compound, and a cathode so as to produce anodically an insoluble iron compound, species, or complex in said medium while cathodically reacting said contaminant ions with the medium to generate an insoluble hydroxide thereof whereby an insoluble iron

compound or complex with the contaminate ion hydroxyide is produced, and whereby substantially chromium free aqueous medium may be separated therefrom, the improvement comprising:

concentrating the insoluble iron-chromium hydroxide compound or complex in said aqueous medium;

adjusting the alkalinity of said concentrate to a pH of at least about 8;



selectively oxidizing the chromium constituent of said compound or complex to soluble, hexavalent chromium ions;

separating said soluble hexavalent chromium ions from said insoluble iron compound whereby said hexavalent chromium ions are available for reuse; and

diluting said soluble hexavalent chromium ions with water to form an aqueous medium for recycling thereof.

4,318,789

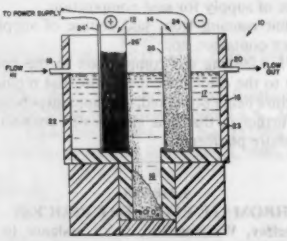
ELECTROCHEMICAL REMOVAL OF HEAVY METALS SUCH AS CHROMIUM FROM DILUTE WASTEWATER STREAMS USING FLOW THROUGH POROUS ELECTRODES

Paul J. Marcantonio, Lexington, Mass., assignor to Kennecott Corporation, Stamford, Conn.

Division of Ser. No. 68,145, Aug. 20, 1979. This application Oct. 30, 1980, Ser. No. 202,328

Int. Cl.³ C02C *5/12*

U.S. Cl. 204—152 **3 Claims**



1. A process for removing chromate anions from aqueous solutions

a. flowing a stream containing chromate anion and at least one other metal into a flow-through anode including a bed of lead shot;

b. maintaining a positive voltage at the anode while said stream is flowed through said bed of lead shot to produce lead chromate;

c. allowing the lead chromate to fall into a trap away from the lead shot; and

d. flowing the stream from which chromate has been removed to a cathode and electrodepositing nonchromium metals at the cathode.

4,318,790

PHOTOCHEMICAL PROCESS FOR PREPARING N-DEMETHYL-DERIVATIVES OF NOGALAMYCIN

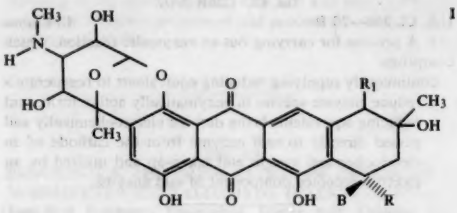
Paul F. Wiley, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 17, 1980, Ser. No. 130,894

Int. Cl.³ B01J *19/12*

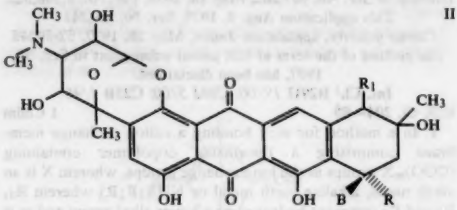
U.S. Cl. 204—158 R **9 Claims**

1. A process for preparing a compound having the structure:



I

wherein R is selected from the group consisting of hydrogen and methoxy; R_1 is selected from the group consisting of hydrogen, carbomethoxy and carboxy; and B is selected from the group consisting of hydrogen and a nucleophile, which comprises subjecting a compound having the formula:



II

to photolysis, wherein R, and R_1 and B are the same as above.

4,318,791

USE OF AROMATIC-ALIPHATIC KETONES AS PHOTO SENSITIZERS

Louis Felder, Basel; Rudolf Kirchmayr, Aesch, and Hüsler, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

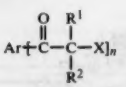
Filed Dec. 18, 1978, Ser. No. 970,016

Claims priority, application Switzerland, Dec. 22, 1977, 15884/77; Mar. 8, 1978, 2518/78; Sep. 18, 1978, 9723/78

Int. Cl.³ C08F *2/50*; C08J *3/28*

U.S. Cl. 204—159.23 **9 Claims**

1. In a method for the photopolymerisation of unsaturated compounds employing a sensitizer, the improvement according to which the sensitizer is a compound of the formula



wherein n is 1 or 2, Ar, if n is 1, represents aryl of 6 to 14 carbon atoms, phenyl which is substituted by CN, OH, alk, —Oalk, —Salk, —SO_2alk, —SO_2phenyl, —COOalk, —SO_2NH_2, —SO_2Nalk_2, —NHalk, —$Nalk_2$, —Ophenyl, NHCOalk, —SO_2NHalk or —$CO_2N(alk)_2$, or represents thienyl, pyridyl or furyl, wherein alk represents a lower alkyl radical of 1 to 4 carbon atoms, and, if n is 2, represents arylene of 6 to 12 carbon atoms or a phenylene-T-phenylene group, X

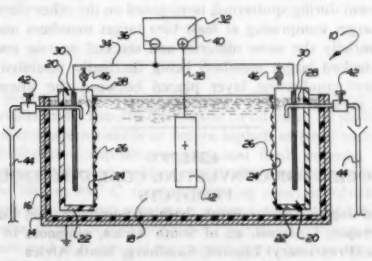
represents one of the groups $—NR^4R^5$, $—OR^6$, —O—$Si(R^7)(R^8)_2$, hydroxymethoxy, (C_1–C_4alkoxy)methoxy, (C_2–C_8acyloxy)methoxy or together with R^1 represents $—OCH(C_1$–C_8alkyl)—$O(CH_2)_{1-2}$—, $—OCH(C_6$–C_{14} aryl)—O—$(CH_2)_{1-2}$—, $—OCH(C_1$–C_8 alkyl)— or $—OCH(C_6$–C_{14} aryl), T represents —O—, —S—, $—SO_2$—, $—CH_2$— or —CH=CH—, R^1, if n is 1 and X is $—OR^6$, represents C_1–C_8alkyl which can be substituted by C_2–C_8acyloxy, —COO—(C_1–C_4) alkyl or —CN, or represents C_5–C_6cycloalkyl or C_7–C_9 phenylalkyl, and, in all other cases, represents alkyl of 1 to 8 carbon atoms which can be substituted by OH, C_1–C_4alkoxy, C_2–C_8acyloxy, —COO—(C_1–C_4)alkyl or —CN, or represents cycloalkyl of 5 to 6 carbon atoms or phenylalkyl of 7 to 9 carbon atoms, R^2 has one of the meanings assigned to R^1 or represents allyl, methallyl, 2-carbamoylethyl, 2-(N-C_1–C_4alkylcarbamoyl)ethyl, 2-(N,N-di-C_1–C_4alkylcarbamoyi)ethyl, 2-(2-pyridyl)ethyl, 2-(2-oxo-1-pyrrolidinyl)ethyl or 2-(di-O-C_1-C_4alkylphosphono)ethyl, or R^1 and R^2 together represent alkylene of 4 to 6 carbon atoms or oxaalkylene or azaalkylene of 3 to 4 carbon atoms, or R^1 and R^2 are both hydroxymethyl, R^4 represents alkyl of 1 to 12 carbon atoms, alkyl of 2 to 4 carbon atoms which is substituted by —OH or —Oalk, or represents allyl, cyclohexyl, phenylalkyl of 7 to 9 carbon atoms, phenyl or phenyl which is substituted by Cl, alk, OH, —Oalk or —COOalk, R^5 represents alkyl of 1 to 12 carbon atoms, alkyl of 2 to 4 carbon atoms which is substituted by —OH or —Oalk, or represents allyl, cyclohexyl or phenylalkyl of 7 to 9 carbon atoms, or together with R^4 represents alkylene of 4 to 5 carbon atoms which can be interrupted by —O—, —NH— or —Nalk—, or together with R^2 represents alkylene or phenylalkylene of 1 to 9 carbon atoms or oxaalkylene or azaalkylene of 2 to 3 carbon atoms, R^6 represents hydrogen, alkyl of 1 to 12 carbon atoms, alkyl of 2 to 4 carbon atoms which is substituted by —OH or —Oalk, or represents allyl, cyclohexyl, phenylalkyl of 7 to 9 carbon atoms, phenyl or phenyl which is substituted by Cl or alk, R^7 and R^8 are the same or different and represent alkyl of 1 to 4 carbon atoms or phenyl, with the proviso that if n is 1 and Ar is phenyl or phenyl substituted by one or two members selected from Cl, Br, alkyl, alkoxyl or dialkylamino and X is OH or alkoxy, R^1 and R^2 are not both unsubstituted alkyl.

4,318,792

PROCESS FOR DEPOSITING FORGING LUBRICANT ON TITANIUM WORKPIECE

Jerry D. Snow, Parma, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Jul. 7, 1980, Ser. No. 165,848
Int. Cl.[3] C25D *13/02, 13/06;* C10M *3/04*
U.S. Cl. 204—181 R **19 Claims**



1. An electrophoretic process for coating a titanium workpiece with a forging lubricant precoat comprising the steps of:

providing an electrophoretic coating bath having components of a particulate forging lubricant precoat suspended therein, said components, by dry lubricant coating weight, consisting essentially of 33%–73% PbO; 20%–38% SiO_2; 0%–12% B_2O_3; 0%–8% ZrO_2 and alkaline earth metal oxides, and less than 6% alkali metal oxides;

providing at least one electrophoresis cathode in contact with the bath;

immersing the titanium workpiece in the coating bath, and

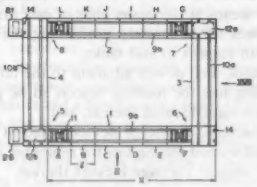
applying anodic potential to the titanium workpiece while applying cathodic potential to the electrophoresis cathode to electrophoretically deposit a forging lubricant precoat on the workpiece while controlling the rate of anodization of the workpiece by maintaining a specific resistivity of the bath at a level in excess of about 400 ohm-centimeters.

4,318,793

AUTOMATIC PLATING APPARATUS

Masato Ando, Yokohama; Kenji Yamamoto, Komae, and Kazuhiro Taniguchi, Hiratsuka, all of Japan, assignors to Electroplating Engineers of Japan, Limited, Tokyo, Japan

Filed Apr. 21, 1980, Ser. No. 142,524
Claims priority, application Japan, Dec. 29, 1979, 54/172186
Int. Cl.[3] C25D *17/28, 17/06*
U.S. Cl. 204—198 **6 Claims**



1. A plating apparatus, comprising:

a first plating line comprising a first series of treating tanks arranged in a line, said first plating line having an inlet end and an outlet end;

a second plating line comprising a second series of treating tanks arranged in a line, said second plating line being substantially parallel with and laterally spaced from said first plating line, said second plating line having an inlet end and an outlet end, the outlet end of said first plating line being laterally aligned with the inlet end of said second plating line and the outlet end of said second plating line being laterally aligned with the inlet end of said first plating line;

a first, linearly movable conveyor extending laterally from the outlet end of said first plating line to the inlet end of said second plating line;

a second, linearly movable conveyor substantially parallel with said first conveyor and extending laterally from the outlet end of said second plating line to the inlet end of said first plating line;

said first plating line, said second plating line and said first and second conveyors forming a closed circuit which is substantially rectangular in plan view;

a first pair of parallel, elongated, laterally spaced rails disposed above said first series of treating tanks and extending from the inlet end to the outlet end of said first plating line;

a second pair of parallel, elongated, laterally spaced rails disposed above said second series of treating tanks and extending from the inlet end to the outlet end of said second plating line;

a plurality of support carriages, said support carriages being mounted on said rails for lengthwise movement therealong, said support carriages in each of said plating lines being in end-abutting-end relationship and being located at positions corresponding to the positions of said treating tanks, said support carriages including means for holding the objects to be plated so that said objects can be inserted into said treating tanks and can be removed from said treating tanks;

first, intermittently operable, forwarding means adjacent to the inlet end of said first plating line, second, intermit-

tently operable, forwarding means adjacent to the inlet end of said second plating line, each of said forwarding means being engageable with a support carriage at the inlet end of its associated plating line for pushing the latter support carriage lengthwise of its associated plating line a distance equal to the width of one tank and thereby effecting intermittent, stepwise movement of said support carriages along the rails of its associated plating line when said objects are removed from said treating tanks so that said support carriages are moved from a position above one of said tanks to a position above the next following tank whereby said support carriages are intermittently moved along the respective plating lines from the inlet end to the outlet end thereof;

a laterally movable transport carriage on each of said conveyors, said transport carriage being movable between said plating lines, and means on said transport carriage for receiving a support carriage discharged from the outlet end of one of said plating lines and moving said support carriage to the inlet end of the other plating line;

positioning means at the outlet ends of said first and second plating lines for accurately positioning the support carriages with respect to said tanks;

a first, vacuum, feed device adjacent to the inlet end of said first plating line for feeding objects to be plated onto a support carriage located thereat; and

a second, vacuum, discharge device adjacent to the outlet end of said second plating line for removing plated objects from the support carriage located thereat.

4,318,794

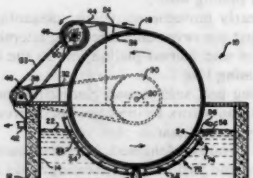
ANODE FOR PRODUCTION OF ELECTRODEPOSITED FOIL

Edward Adler, 266 Arch Rd., Englewood, N.J. 07631

Filed Nov. 17, 1980, Ser. No. 207,239

Int. Cl.³ C25D *17/00, 1/04*

U.S. Cl. 204—216 **14 Claims**



1. Apparatus for electrodeposition of a metal on a cylindrical cathode which is rotated about a horizontal axis and is partly submerged in an electrolyte, said cylindrical cathode having a surface layer thereon upon which metal from said electrolyte may be deposited and from which a deposited layer of said metal may be stripped, comprising a plurality of strips of dimensionally stable anode, means for supporting each of said plurality of strips parallel to said horizontal axis and spaced a predetermined distance from said surface layer to form a generally annular space between said surface and said plurality of strips extending about substantially the entire portion of said surface layer which is submerged in said electrolyte.

4,318,795

VALVE METAL ELECTRODE WITH VALVE METAL OXIDE SEMI-CONDUCTOR FACE AND METHODS OF CARRYING OUT ELECTROLYSIS REACTIONS

Giuseppe Bianchi, Milan, Italy; Vittorio de Nora, Nassau, The Bahamas; Patrizio Gallone, and Antonio Nidola, both of Milan, Italy, assignors to Diamond Shamrock Technologies S.A., Geneva, Switzerland

Division of Ser. No. 635,879, Nov. 28, 1975, which is a division of Ser. No. 771,665, Oct. 29, 1968, Pat. No. 3,948,751, which is a continuation-in-part of Ser. No. 690,407, Dec. 14, 1967, Pat. No. 3,616,445. This application Jan. 23, 1978, Ser. No. 871,407

Int. Cl.³ C25B *11/08, 11/10*

U.S. Cl. 204—290 F **15 Claims**

1. An electrode comprising a valve metal base and a semiconducting coating from the group consisting of valve metal oxides, platinum group metal oxides, oxides of silver, tin, chromium, lanthanum, cobalt, antimony, molybdenum, nickel, iron, tungsten, vanadium, phosphorus, boron, beryllium, sodium, calcium, strontium, lead, copper and bismuth, and mixtures thereof, on said base, said coating having oxygen deficiencies in the crystal lattice.

4,318,796

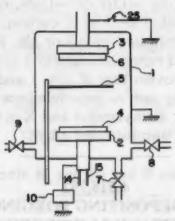
SPUTTERING APPARATUS

Hiroshi Nishiyama, Mukou; Suehiro Kato, Nagaokakyo, and Takeshi Nakamura, Uji, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Jul. 15, 1980, Ser. No. 169,027

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—298 **5 Claims**



1. A sputtering apparatus for the deposition of thin films of a material other than metals on substrates, comprising a pair of opposed electrodes, one of which is adapted to mount a substrate thereon, wherein a target of a material other than metals, from which thin-film-forming atoms are ejected by ion-bombardment during sputtering, is mounted on the other electrode, said target comprising at least two target members made of substantially the same material and stacked on one another, said stacked target members being thermally insulated by a non-heat conducting layer placed between the lowermost target member and the other electrode.

4,318,797

PROCESS FOR CONVERTING COAL INTO LIQUID PRODUCTS

Berend Jager; Andries Brink, both of Sasolburg, and Cornelis Kleynjan, Lochvaal, all of South Africa, assignors to Sasol One (Proprietary) Limited, Sasolburg, South Africa

Filed Jun. 5, 1980, Ser. No. 156,684

Claims priority, application South Africa, Jun. 18, 1979, 79/2997

Int. Cl.³ C10G *1/00*

U.S. Cl. 208—8 LE **41 Claims**

1. Process for converting a liquefiable coal directly into predominantly liquid products suitable for making hydrocarbon fuel by slurrying the comminuted coal in a pasting oil and digesting the slurried coal under hydrogenative conditions at a

temperature ranging from about 380° to about 500° C. and a pressure in the range of about 8 MPa (80 bar) to about 30 MPa (300 bar), if, and to the extent necessary removing non-liquefied solids from the digested slurry, fractionating the digested slurry by distillation to produce a light oil fraction, a middle oil fraction and a heavy or residue fraction, the fraction cutting temperatures (reduced to atmospheric pressure) being about 200±50° C. between the light oil and middle oil and about 400±50° C. between the middle oil and the heavy or residue fraction and recycling part of said fractions to substantially or predominantly provide the pasting oil, and wherein one part of the coal is slurried and digested in a first stream (I) wherein the pasting oil is composed substantially of light oil and heavy or residue fraction, including a heavy or residue fraction derived from coal slurried and digested in a separate and distinct second stream (II), wherein the pasting oil in the second stream (II) is substantially composed of recycled middle oil incorporating about 50 to 100% of all the middle oil derived by fractionating the digested slurry of the first stream (I), whilst the pasting oil used for slurrying and digesting the coal of the first stream (I) incorporates about 50 to 100% of all the heavy or residue fraction derived by fractionating the digested slurry of the second stream (II), light oil derived by fractionating the digested slurry of the second stream (II) being withdrawn as a product or one of the products.

4,318,798

PROCESS OF COOLING HOT GRANULAR SOLIDS

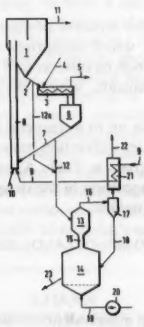
Johannes-Josef Albrecht, Frankfurt am Main; Roland Rammler, Königstein, and Martin Hirsch, Friedrichsdorf, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 25, 1980, Ser. No. 181,579

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1979, 2937065

Int. Cl.³ C10G *1/02*

U.S. Cl. 208—11 R **7 Claims**



1. A process of cooling hot granular solids which have been made available by the dry distillation of oil sand, oil shale, oil chalk, diatomaceous earth or native asphalt as fresh material, said distillation comprising mixing said fresh material with devolatilized reheated residual solids of a temperature in the range of 500° to 900° C. from a collecting zone, devolatilizing said fresh material and creating a mixture of residual solids, a first partial stream of said mixture of residual solids being fed to the lower end of a vertical pneumatic conveyor line together with preheated combustion air, by combustion gases reheating said residual solids in the conveyor line and conveying them upwardly into said collecting zone, granular solids selected from the group composed of a second partial stream of said mixture of granular solids or a partial steam or reheated solids from the collecting zone or a mixture of both streams, these granular solids having a carbon content of 1 to 15 percent by weight, being fed into a combustion zone, said carbon content being at least partly burned therein by a supply of combustion air and said granular solids in said combustion zone are heated to a temperature in the range of about 600° to 1300° C., feeding said granular solids heated in said combustion zone to a cooling zone, in said cooling zone, maintaining said granular solids in an agitated or trickling state and causing air to rise through said cooling zone in direct contact with the granular solids, utilizing at least part of the sensible heat of the granular solids dissipated in the combustion zone or cooling zone for preheating the combustion air fed into the pneumatic conveyor line, the cooling zone being constituted by a multi-chambered fluidized bed zone or a trickling zone.

4,318,799

COMBINATION OF ALUMINUM AND PHOSPHORUS PASSIVATION PROCESS

Jin S. Yoo, Flossmoor, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed May 19, 1980, Ser. No. 150,853

Int. Cl.³ C10G *11/18, 47/12*

U.S. Cl. 208—114 **12 Claims**

1. In a process for converting a hydrocarbon material having at least one metal contaminant selected from the group consisting of nickel, vanadium, iron and copper which comprises contacting the hydrocarbon material in a reaction zone at hydrocarbon conversion conditions with a catalyst to form a conversion product and a deactivated catalyst having carbonaceous deposits and containing at least a portion of said metal contaminant, and regenerating at least a portion of said deactivated catalyst to restore at least a portion of the catalyst activity by removing at least a portion of said carbonaceous deposits to form a regenerated catalyst, wherein the improvement comprises: contacting at least a portion of said regenerated catalyst with a liquid medium containing an effective amount of a mixture comprising at least one aluminum-containing and at least one phosphorus-containing material for passivating at least a portion of said at least one metal contaminant for a time sufficient to permit at least a portion of said material to interact with said portion of said regenerated catalyst to form a treated catalyst containing aluminum and phosphorus atoms from said mixture, contacting said treated catalyst with an oxidative wash to form a washed catalyst, and transferring at least a portion of said washed catalyst to said reaction zone.

4,318,800

THERMAL REGENERATIVE CRACKING (TRC) PROCESS

Herman N. Woebcke, Stamford, Conn.; Arju H. Bhojwani, Lawrenceville, N.J.; Robert J. Gartside, Auburndale, Mass., and Axel R. Johnson, North Babylon, N.Y., assignors to Stone & Webster Engineering Corp., Boston, Mass.

Filed Jul. 3, 1980, Ser. No. 165,782

Int. Cl.³ C10G *9/32*

U.S. Cl. 208—127 **29 Claims**

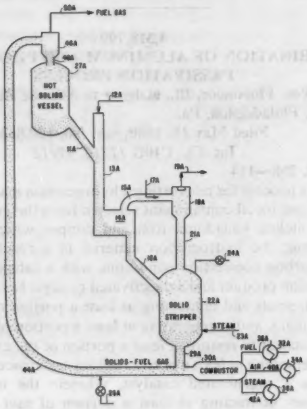
1. In a TRC process wherein the temperature in the cracking zone is between 1300° and 2500° F. and wherein the hydrocarbon feed or the hydrodesulfurization residual oil along with the entrained inert solids and the diluent gas are passed through the cracking zone for a residence time of 0.05 to 2 seconds, the improvements comprising:

(1) the process for generating fuel oil and removing coke deposits on said solids comprising the steps of:
  (a) generating a fuel gas from fuel and air;
  (b) delivering the fuel gas to a transfer line;
  (c) mixing the particulate solids with the fuel gas in the transfer line to elevate the temperature of the solids; and
  (d) combusting the fuel gas in the transfer line to elevate the temperature of the solids and remove the coke from the solids; and

(2) the process for separating by centrifugal force particulate solids from the dilute mixed phase stream of gas and solids comprising the steps of:
  (a) adding the mixed phase stream to a chamber having a

flow path of essentially rectangular cross section from an inlet of inside diameter D_i disposed normal to the flow path, said flow path having a height H equal to D_i or 4 inches, whichever is greater, and a width W greater than or equal to 0.75 D_i but less than or equal to 1.25 D_i,

(b) disengaging solids from gas by centrifugal force within said chamber along a bed of solids found at a wall opposite to the inlet as the gas flows through said flow path, the gas changing direction 180°, and the solids being projected 90° toward a solids outlet,



(c) withdrawing the gaseous portion of the inlet stream from a gas outlet, disposed 180° from the inlet, the gas portion containing about 20% residual solids, said gas outlet located between the solids outlet and inlet, the gas outlet being at a distance no greater than 4 D_i from the inlet as measured between respective centerlines, and

(d) withdrawing the solids by gravity through the solids outlet.

4,318,801

SUPPORTED NICKEL-MOLYBDENUM CATALYST, PREPARATION THEREOF, AND HYDRODESULFURIZATION OF HYDROCARBON FRACTIONS USING SAME

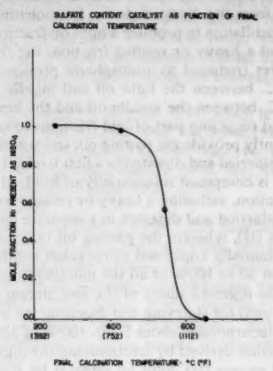
Henri K. Lese, Monroeville; Raynor T. Sebulsky; John J. Stanulonis, both of Pittsburgh; Joseph A. Tabacek, New Kensington, and Roger F. Vogel, Bulter, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sep. 4, 1979, Ser. No. 72,233

Int. Cl.[3] **C10G** *45/04, 45/60;* **B01J** *27/02, 23/64*

U.S. Cl. 208—216 R **56 Claims**

1. A catalyst composite consisting essentially of a refractory inorganic oxide support impregnated with molybdenum and nickel, said catalyst composite having been formed by a process which consists essentially of contacting said refractory inorganic oxide support with an aqueous, alkaline impregnating solution consisting essentially of NH_4^+, Ni^{++}, SO_4^{--}, NS MO^{+VI} using the one-step, incipient wetness technique and the volume of said impregnating solution necessary for such technique, said Ni^{++} and Mo^{+VI} being present in said impregnating solution in amounts sufficient to provide said catalyst composite with between about 1 and about 10 weight percent nickel and between about 44 and about 25 weight percent molybdenum, based upon total catalyst weight, substantially all of said $nickel^{++}$ being supplied from nickel sulfate, and heating said impregnated support to dry and calcine said catalyst composite, said calcination being an oxidative calcination conducted in the presence of an oxygen-containing gas at a



temperature in the range of 427° and about 566° C. such that sulfate remains on said support.

4,318,802

PROCESS FOR THE PURIFICATION OF HYDROCARBONS

Petrus F. A. Van Grinsven, and Martin F. M. Post, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 24, 1980, Ser. No. 200,175

Claims priority, application Netherlands, Nov. 21, 1979, 7908477

Int. Cl.[3] **C10G** *25/05*

U.S. Cl. 208—245 **10 Claims**

1. A process for the removal of mercaptans from light hydrocarbon mixtures, which comprises contacting mercaptan-containing hydrocarbon mixture as feed in a contact zone with a crystalline metal silicate, which silicate has the following properties:

(a) thermally stable up to a temperature above 600° C.;

(b) an X-ray powder diffraction pattern showing, inter alia, the reflections given in Table A, in the specification;

(c) an overall composition in the dehydrated form, in terms of moles of the oxides:

$$(1.0\pm0.3)(R)_{2/n}O.[aFe_2O_3.bAl_2O_3.cGa_2O_3].y(dSiO_2.eGeO_2),$$

where

R=one or more monovalent or bivalent cations;

$a \geqq 0.1$;

$b \geqq 0$;

$c \geqq 0$;

$a+b+c=1$;

$y \geqq 10$;

$d \geqq 0.1$;

$e \geqq 0$;

$d+e=1$ and

n=the valency of R;

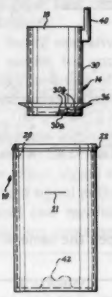
(d) in the formula which represents the composition of the silicate, expressed in moles of the oxides, and in which oxides of hydrogen, alkali metal and/or alkaline earth metal, silicon, aluminum and/or iron are present, the $(Al_2O_3+Fe_2O_3)/SiO_2$ molar ratio, designated herein as m, is lower than 0.1; and

(e) separating from said crystalline silicate a hydrocarbon mixture product having lower mercaptan content than said feed.

4,318,803
FECAL FLOTATION APPARATUS

Raymond S. Holmgren, 4608 NE. 102nd, Portland, Oreg. 97220

Filed Jul. 14, 1980, Ser. No. 167,926
Int. Cl.³ B03B 7/00
U.S. Cl. 209—17 1 Claim



1. Apparatus usable in diagnosing the presence, in a liquid suspension, of particles having a size less than a predetermined size, said apparatus comprising

a liquid-receiving vial having an upper opening,

a tubular plunger adapted for insertion in said vial to create a space between the inside of the vial and the outside of the plunger, said plunger having an upper opening and being dimensioned to be pleaceable fully into said vial,

a filter in said plunger including openings sized for allowing passage therethrough of particles having sizes up to, but not exceeding, said predetermined size,

sealing means joined to the outside of said plunger for interposition between the vial and plunger, when the latter is inserted in the former, to form a substantially fluid-tight seal therebetween, said plunger and sealing means being constructed to enable formation of a convex liquid crown at the plunger's upper opening, above the vial's upper opening as the plunger is inserted into the vial, with the vial containing a selected quantity of such suspension,

handle means on said plunger, extending above the vial's upper opening, enabling manipulation of said plunger fully into said vial, said plunger, sealing means and handle means being constructed to enable complete insertion into said vial, where the vial contains such a quantity of such suspension, without spillover of liquid from said vial, and

a cap which is attachable to said vial's upper opening to seal said vial.

4,318,804
DEVICE FOR SEPARATING MIXTURE

Takato Nakajima, Sakakimachi, Japan, assignor to Kanetsu Kogyo Kabushiki Kaisha, Ueda, Japan

Filed Nov. 7, 1980, Ser. No. 204,809
Claims priority, application Japan, Nov. 16, 1979, 54-147618; Dec. 12, 1979, 54-160343
Int. Cl.³ B03C 1/12
U.S. Cl. 209—221 8 Claims

1. A device for separating a mixture material comprising:

a drum disposed in a non-vertical posture and revolving in one direction about a longitudinal central axis thereof, said drum being formed of a nonmagnetic substance and supplied with a mixture material being treated;

an annular magnetic means surrounding said drum at a spacing from the outer peripheral surface thereof, and generating a magnetic field rotating in a reverse direction to the direction of rotation of said drum, so as to attract a magnetic material of said mixture material to the inner peripheral surface of said drum and exert on a nonmagnetic conductive material of said mixture material an electromagnetic force acting in the reverse direction to the direction of rotation of said drum;

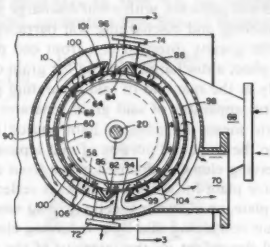
a magnetic shield for releasing said magnetic material from the inner peripheral surface of said drum in a predetermined rotational region in said drum, said magnetic shield being disposed between said drum and said annular magnetic means on the upper side of said drum; and

a means for receiving the magnetic material released from the inner peripheral surface of said drum.

4,318,805
SCREENING APPARATUS

Peter E. LeBlanc, Norton, Mass., assignor to Bird Machine Company, Inc., South Walpole, Mass.

Filed Sep. 29, 1980, Ser. No. 191,827
Int. Cl.³ B07B 1/20
U.S. Cl. 209—273 19 Claims



1. In a screening apparatus for separating on a size basis solid components of a pulp slurry which comprises a screen of circular cross-section apertured to form an annular screening zone between its ends, a substantially closed surfaced drum having an axial length at least substantially equal to the axial length of said screening zone of said screen and having pulse creating means on one surface thereof, mounting means coaxially mounting said screen and drum for relative rotation about their common axis with said pulse creating means located between said drum and said screen, feed means for feeding slurry to the space between said screen and said drum rejects removal means for removing from said space slurry not passing through said screen, accepts removal means for removing slurry passing through said screen, and a casing surrounding the foregoing having outlet piping comprised respectively in said rejects and accepts removal means and otherwise sealed to prevent escape of slurry therefrom, said mounting means being constructed and arranged to form said space as a closed flow path for the slurry in said casing from said feed means to said removal means;

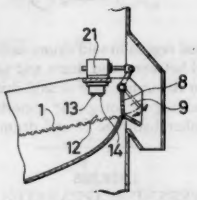
the improvement wherein said feed means comprises inlet means for admitting the feed slurry to said space having at least one inlet to said space extending substantially the full axial length of said screening zone of said screen, and said rejects removal means comprises rejects receiving means providing at least one rejects outlet thereto from said space extending at least substantially the full axial length of said screening zone of said screen.

4,318,806

AUTOMATIC CONTROL APPARATUS FOR A GRAIN SEPARATOR

Toshihiko Satake, Higashihiroshima, Japan, assignor to Satake Engineering Co., Ltd., Tokyo, Japan

PCT No. PCT/SP79/00088, § 371 Date Feb. 29, 1980, § 102(e) Date Feb. 1, 1980, PCT Pub. No. WO80/00132, PCT Pub. Date Feb. 7, 1980
PCT Filed Apr. 5, 1979, Ser. No. 190,762
Claims priority, application Japan, Jun. 30, 1978, 53/80111; Aug. 3, 1978, 53195617
Int. Cl.³ B03B 4/00, 13/02
U.S. Cl. 209—496 3 Claims



1. In a grain separator having a separating plate inclined and supported at a front elevated position to separate a mixture of soil particles and grain particles having different shades and specific gravities and which is oscillated back and forth to collect sand soil particles, with a soil discharge particles opening for gathering and discharging soil particles of relatively large specific gravity disposed at a front end portion of said separating plate, a discharge opening for grain of smaller specific gravity at the rear end of said separating plate: an automatic control apparatus of said grain separator comprising a photoelectric means including a light source for projecting light rays to the front end portion of said separating plate and a light receiving element mounted in the front end portion of said separator plate for detecting the rays reflected from said separating plate, an electromagnetic driving means connected to the circuit containing said light receiving element generating a signal dependent on the intensity of the reflected rays and, a switching valve means connected to said electromagnetic driving means for selectively allowing or blocking discharge of said particles at said soil particles discharge opening.

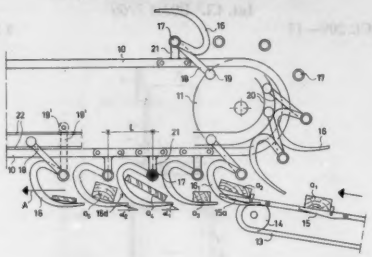
4,318,807

METHOD AND APPARATUS FOR DROP-SORTING OF TIMBER

Veijo Maki-Hoimela, Helsinki, Finland, and Alpo Rysti, Friisilantie 36, 02240 Espoo 24, Finland, assignors to Alpo Rysti, Espoo, Finland

Filed Jan. 22, 1980, Ser. No. 114,217
Claims priority, application Finland, Sep. 18, 1979, 792902
Int. Cl.³ B07C 5/14
U.S. Cl. 209—517 14 Claims

1. A method of sorting timber pieces in which the pieces are conveyed transversely on supporting means in the form of hooks associated with a conveyor and formed with arcuate closed sections, characterized by positioning the hooks so that the arcuate closed sections of each hook faces and effectively closes the open sections of the next adjacent preceeding hook in the direction of travel along at least a portion of the run of the conveyor, loading at least some of the hooks with a timber piece by positioning the piece within the confines of the surface defining the interior of the respective hooks, advancing said loaded hooks along a conveyor run and causing said timber pieces to fall from said loaded hooks by pivoting selected



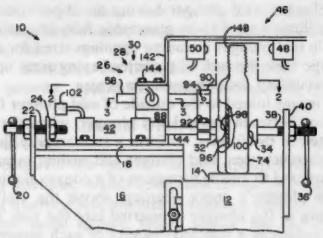
hooks effectively to open the same at selected locations along said run.

4,318,808

INSPECTION DEVICE FOR CONTAINERS

David A. Atkinson, Parkersburg, W. Va., assignor to Ball Corporation, Muncie, Ind.

Filed Jun. 4, 1979, Ser. No. 45,380
Int. Cl.³ B07C 5/00
U.S. Cl. 209—533 4 Claims



1. An inspection device for detecting containers that are outside of minimum or maximum size limitations, said containers including a concave side panel, which device comprises:
mechanical reference means for contacting one of said containers at a first selected location;
mechanical contactor means for contacting said one container at a second selected location on said concave side panel and for gauging said one container;
light beam detector means, comprising a light source and a photoelectric sensor, for supplying light to said photoelectric sensor, for sensing light received by said photoelectric sensor, and for controlling a first signal in response to said light received by said photoelectric sensor; and
transducer means, being optically interposed between said light source and said photoelectric sensor and being operatively connected to said mechanical contactor means, for transmitting said light to said photoelectric sensor and for varying said transmission of light to said photoelectric sensor in accordance with said gauging of said one container and in accordance with both of said size limitations thereof, whereby said first signal indicates whether or not said one container is outside either of said size limitations;
conveyor means for conveying said containers sequentially between said mechanical reference means and said mechanical contactor means;
container position detector means, for controlling a second signal that indicates the position of said one container and subsequent containers relative to a line between said me-

chanical reference means and said mechanical contactor means as said containers are conveyed therebetween;

contactor actuator means, being operatively connected to said mechanical contactor means and to said container position detector means, for actuating said mechanical contactor means into said contact with said one container in response to said second signal, and for actuating said mechanical contactor means away from said contact without stopping said conveying of containers;

contact detector means, being operatively connected to said mechanical contactor means, for controlling a third signal that is indicative of said contacting of said mechanical reference means and said mechanical contactor means with said one container; and

logic means, being operatively connected to both said light beam detector means and to said contact detector means, for controlling a fourth or reject signal to be a function of said first signal when said third signal indicates that said mechanical reference means and said mechanical contactor means are in contact with said one container.

4,318,809

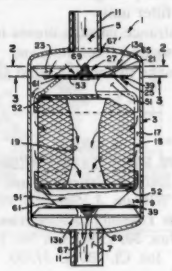
BI-DIRECTIONAL FILTER/DRIER HAVING MAGNETICALLY BIASED FLAPPER VALVES

Vernon V. Bethel, O'Fallon, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 41,699, May 23, 1979, abandoned. This application Apr. 18, 1980, Ser. No. 141,555

Int. Cl.³ B01D *33/38*

U.S. Cl. 210—117 **6 Claims**



1. In a bi-directional filter/drier unit for use with a heat pump or the like, said filter/drier comprising a housing, a chamber within said housing, a first inlet/outlet, a second inlet/outlet, filter means within said chamber disposed between said first and second inlet/outlet, said filter means having a flow passage therethrough, a first valve means disposed between said first inlet/outlet and an adjacent end of said filter means, and a second valve means disposed between said second inlet/outlet and the other end of said filter means, each of said valve means including a one way flapper valve for permitting the flow of high pressure refrigerant from its respective inlet/outlet to the portion of said chamber surrounding the exterior of said filter means, said refrigerant flowing in generally radial direction through said filter means from the exterior to the interior thereof, each of said valve means including a one-way outlet valve for the flow of refrigerant therethrough from said flow passage in said filter means to a respective adjacent inlet/outlet, each of said valve means including a plate and having a plurality of flapper holes therethrough for the flow of refrigerant through said flapper valve, said flapper holes being arranged in a substantially circular pattern generally centered on said plate, said flapper valve further comprising a flapper member disposed on the side of its respective plate toward said filter means and having portions thereof overlying said flapper holes for permitting the flow of refrigerant through said flapper holes from its respective inlet/outlet to the exterior of said filter means and for blocking the flow of refrigerant from the exterior of said filter means, wherein the improvement comprises: said plate for each valve means being of ferro-magnetic material, and each of said flapper valves being of limp, flexible sheet material and having a central portion and a plurality of flapper arms, one for each of said openings, each of said flapper arms extending radially outwardly from said central portion and being of such length and width so as to overlie its respective flapper hole so as to close the flapper hole when the flapper valve is closed, each of said flapper valves further including magnetic means for positively holding said flapper in closed position against said plate closing said flapper openings and for permitting movement of said flapper member away from said plate so as to open said flapper openings in response to a differential pressure across said plate with the higher pressure on the inlet/outlet side of said plate, each of said flapper arms carrying a magnet of a size sufficient to overlie its respective said flapper hole, each said magnet being secured to its flapper arm so as to magnetically hold said flapper arm against said plate all around its respective flapper hole thereby to positively close said flapper hole.

4,318,810

APPARATUS FOR THE CONVERSION OF POLLUTANTS CONTAINED IN EFFLUENTS AND EFFLUENT SLUDGES

Theo Stähler, Hadamar-Niederzeuzheim, Mühlenhof, Fed. Rep. of Germany

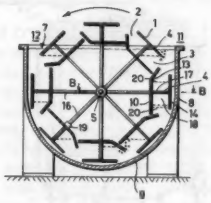
PCT No. PCT/DE79/00050, § 371 Date Jan. 22, 1980, § 102(e) Date Nov. 19, 1979, PCT Pub. No. WO79/01096, PCT Pub. Date Dec. 13, 1979

PCT Filed May 19, 1979, Ser. No. 190,857

Claims priority, application Fed. Rep. of Germany, May 22, 1978, 2822347

Int. Cl.³ C02F *3/04*

U.S. Cl. 210—150 **18 Claims**



1. An arrangement for the conversion of pollutants contained in effluents and effluent sludges, in particular of harmful substances, into harmless substances, comprising: a plurality of hollow bodies accommodated in an effluent pool adapted to be raised completely from the water or sludge on one side of the pool and to be totally immersed on the other side, that portion which on the emerging side is uppermost, being lowermost on the immersion side and vice versa, said hollow bodies being laterally closed and being open on top and below by upper and lower apertures comprising inlet and outlet, and a closed partition which is substantially parallel to the upper and lower apertures, said hollow bodies comprising a rotor element rotatable about an axis and including a plurality of receptacles spaced about said axis radially outwardly thereof, said element being positioned so that each receptacle utlimately dips into and emerges out of the effluent in the pool, said receptacles each having two open sides which are respectively leading and trailing as considered with reference to the direction of rotation; said partition comprising an imperforate partition wall located in and subdividing the interior of each receptacle generally parallel to the plane of the respective open sides thereof, said axis extending substantially parallel to an upper surface of the effluent in the pool, an imaginary plane passing through said open sides of the respective receptable extending

approximately vertical and normal to said axis of rotation when the respective receptacle is in its most lateral position during rotation of the rotor, said receptacles each having a radially outer wall and a radially inner wall of which the latter has a radially outer free edge portion, said edge portion extending to beneath said radially inner wall of the immediately preceding receptacle, an axis which passes through the upper and lower apertures being horizontal and the respective rotor element being the lower-most position, when an end of the wall facing towards the axis of rotation and being uppermost on the emerging side extends to a level below the same wall of the immediately preceding rotor element viewed in the direction of rotation, air transported by one rotor element under the surface of the water being released below the surface of the water around the front edge of the rotor element facing the axis of rotation and ascending as fine bubbles through the water, so that a portion of said air passes into the space under the rotor element where it forms a bubble said bubble forcing the rotating rotor element upwards for reducing the amount of energy required to drive said rotor element, when part of the air bubbling from the upper space of one hollow body flows into the lower space of the preceding hollow body.

4,318,811

KETTLE FILTER

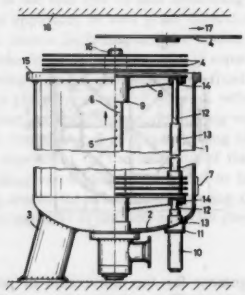
Josef Ziller, Waldstetten, Fed. Rep. of Germany, assignor to Schenk-Filterbau Gesellschaft mit beschränkter Haftung, Waldstetten, Fed. Rep. of Germany

Filed Jan. 23, 1980, Ser. No. 114,721

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1979, 2902444

Int. Cl.³ B01D *29/34*

U.S. Cl. 210—232 **2 Claims**



1. A kettle filter for liquids, the kettle filter comprising:

a housing having a closed bottom and an upper edge defining an opening for closure by a cover during operation of the filter;

a hollow vertical support projecting from the bottom of the housing and beyond the upper edge thereof, said hollow support including openings into which filtrate is discharged and a discharge valve beneath the bottom of the kettle;

a plurality of filter discs stacked in sliding relationship on said hollow support for forming a filter package;

jack means positioned beneath the lowest filter element between the bottom of the kettle and the lowest filter element, the jack means including telescoped segments which extend when the jack means is pressurized, and

means for pressurizing the jack means to lift the entire filter package so that the uppermost filter elements can be sequentially unstacked from the support as the package is raised, whereby the ceiling height of the room containing the kettle need not be raised to accommodate removal of the filter package.

4,318,812

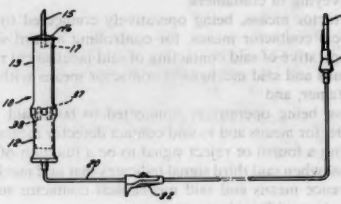
COMPACT FILTER

John L. Vcelka, Zion, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Sep. 24, 1980, Ser. No. 190,115

Int. Cl.³ B01D *35/02*

U.S. Cl. 210—323.2 **15 Claims**



1. A high capacity, compact filter for the filtration of parenteral fluids comprising:

a first filter unit;

a second filter unit; said first and second filter units being formed from a folded, tubular mesh material and positioned in a substantially side-by-side relationship and joined by a common wall member;

a tubular plastic member surrounding said filter units and integrally sealed to said filter units at one end and sealed closed at the opposite end to form a closure;

a first fluid entrance passage means in fluid communication with said first filter unit;

a second fluid entrance passage means in fluid communication with said second filter unit; and

a fluid outlet passage member in fluid communication with said closure.

4,318,813

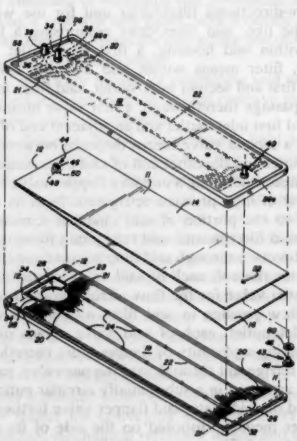
MEMBRANE PLASMAPHERESIS MODULE

William Edelman, Buffalo Grove; James R. Hitchcock, Jr., Barrington, and William J. Schnell, Wheeling, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 30, 1980, Ser. No. 164,735

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.4 **6 Claims**



1. A membrane plasmapheresis module comprising semipermeable membrane means operative for filtering the plasma from whole blood, said membrane means being

folded together about a fold line to form a pair of facing membrane portions defining therebetween a flow path for whole blood,

means on one of said membrane portions for defining a pair of apertures at oppositely spaced positions along said whole blood flow path,

a tubular port member associated with each of said apertures, each of said port members including a stem portion extending outwardly through said associated aperture and a flange portion inwardly disposed against the interior of said one membrane portion,

a pair of plates adjacently disposed to said membrane portions and together sealingly enclosing said membrane portions, and

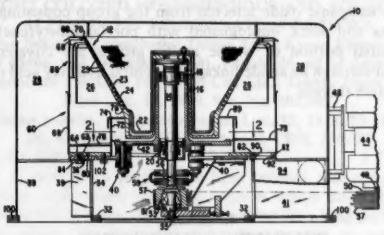
portions integrally formed on said one plate defining means which are adjacent disposed to said one membrane portion for forming thereon a pair of outwardly extending, generally rigid tubular members each axially aligned with a respective one of said tubular port members and engagable in telescopic, interference fit relationship about said respective outwardly extending stem portion to affix the positions of both of said tubular port members relative to said one membrane portion.

4,318,814

CONTINUOUS CENTRIFUGAL MACHINE

Donald L. Hurley, Hamilton, Ohio, assignor to The Western States Machine Company, Hamilton, Ohio

Filed Jan. 21, 1980, Ser. No. 113,745
Int. Cl.³ B01D *33/02*
U.S. Cl. 210—365 **4 Claims**



1. In a continuous centrifugal machine including a rigidly fixed base structure, a bearing housing, a normally vertical basket shaft journalled for rotation on bearings in said bearing housing, an upwardly open frusto-conical centrifugal basket secured to the upper end of said shaft for rotation therewith, a stationary curb wall mounted on said base structure and surrounding said basket, means for resiliently mounting said bearing housing to permit gyration of said basket about a point on the axis of said shaft, rotary drive means including a motor mounted to one side of said curb wall, and means connecting said motor with the lower end of said shaft for rotating said basket, the improvement comprising:

an upwardly facing radial support ring mounted on said base structure inside said curb wall and surrounding said housing mounting means, and an annular chambering unit formed as an integrated structure and supported on said support ring in a space between the side wall of said basket and said curb wall, said chambering unit including a radial annular base wall having a downwardly facing surface seated on said support ring, radially spaced inner and outer annular partitions rigidly mounted on and extending upwardly from said base wall and having respective upper ends disposed adjacent the lower and upper ends respectively of said basket side wall, and a floor partition extending about, radially spanning the space between, and rigidly secured to said annular partitions, at least a portion of said floor partition being spaced above said base wall and coacting therewith to fix said annular partitions rigidly in radially spaced relation, said partitions together forming a liquid collecting chamber directly outside and under said basket side wall and spaced radially inward from said curb wall, said bearing housing mounting means being fixed to portions of said base wall and being located radially inside and accessible for adjustment from below said support ring and said base wall; said bearing housing mounting means, said chambering unit, said bearing housing, said basket shaft, and said basket constituting a unitary assembly that as a unit is assembleable onto and removable from said support ring inside said curb wall.

4,318,815

SULFATED BIOPOLYMERS FOR USE IN RECOVERING PETROLEUM FROM A SUBTERRANEAN FORMATION

Timothy N. Tyler, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Nov. 26, 1979, Ser. No. 97,117
Int. Cl.³ E21B *43/22*
U.S. Cl. 252—8.55 D **5 Claims**

1. A method for recovering petroleum from a subterranean, petroleum-containing formation penetrated by at least one injection well and by at least one production well, comprising injecting an aqueous fluid containing a viscosifying amount of a sulfated Xanthan gum into the formation to displace petroleum through the formation to the production well from which it is recovered to the surface of the earth.

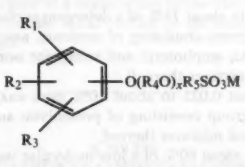
4,318,816

SURFACTANT WATERFLOODING ENHANCED OIL RECOVERY METHOD USING STABILIZED SURFACTANT SOLUTION

Vernon H. Schievelbein, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 776,406, Mar. 10, 1977, abandoned. This application Sep. 22, 1980, Ser. No. 189,554
Int. Cl.³ E21B *43/22*
U.S. Cl. 252—8.55 D **14 Claims**

1. A method for recovering petroleum from a subterranean, petroleum-containing formation penetrated by a injection well and by a spaced-apart production well, both wells being in fluid communication with the formation, said formation containing water of salinity greater than 50,000 parts per million total dissolved solids, the formation temperature exceeding 150°, comprising injecting an aqueous, saline, surfactant-containing solution into the formation to displace petroleum through the formation, said fluid containing at least one surfactant of the formula



wherein R_1 is an alkyl radical having from 5 to 20 carbon atoms, R_2 and R_3 are each independently hydrogen, methyl, or alkyl radicals having from 5 to 20 carbon atoms, R_4 is ethylene or a mixture of ethylene and higher alkylene such as propylene with relatively more ethylene than higher alkylene, x is a number from 1 to 10, R_5 is ethylene, propylene, hydroxypropylene, or butylene, and M is a monovalent cation, and an amount of liquid hydrocarbon sufficient to avoid precipitation of surfactant from the solution and to prevent phase separation of the solution, said amount of hydrocarbon being less than the amount which would form a microemulsion, the amount of hydrocarbon being determined and the aqueous saline surfactant solution being prepared by:

(a) preparing a series of aqueous saline samples containing a

predetermined concentration of said surfactant, and liquid hydrocabon of different concentrations from one another, with the concentration of liquid hydrocarbon in the samples being in the range from 0 to 0.7 percent by volume;

(b) identifying a first concentration of hydrocarbon below which a white gelatinous phase having density greater than the density of the bulk of the aqueous solution separates to the bottom of the samples;

(c) identifing a second concentration above which separation of the aqueous samples into two distinct phases occurs, with a separated phase having density less than the density of the aqueous solution accumulating on top of the aqueous solution; and

(d) preparing the aqueous saline surfactant containing fluid solution injected into the formation with the concentration of liquid hydrocarbon which is greater than the first concentration and less than the second concentration identified above.

4,318,817
PHOSPHATE ESTER FLUIDS CONTAINING PIPERAZINES

Juergen Huebner, Notre Dame De Gravenchon, France, assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 21, 1980, Ser. No. 114,139
Int. Cl.³ C09K *5/00*
U.S. Cl. 252—78.5 **15 Claims**

1. A fluid comprising a phosphate ester and a corrosion or hydrolysis inhibiting amount of piperazine substituted with an alkyl, alkaryl, hydroxy, hydroxyalkyl, alkoxy, alkoxyalkyl, alkoxyaryl, amino, aminoalkyl, alkylamino, alkylaminoalkyl, a dialkylamino or a dialkylaminoalkyl group.

4,318,818
STABILIZED AQUEOUS ENZYME COMPOSITION

James C. Letton, Forest Park, and Mark J. Yunker, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 92,906, Nov. 9, 1977, abandoned, and Ser. No. 123,857, Feb. 22, 1980, abandoned. This application Oct. 30, 1980, Ser. No. 201,886
Int. Cl.³ C11D *7/42, 3/386*
U.S. Cl. 252—174.12 **15 Claims**

1. A stabilized aqueous enzyme composition consisting essentially of;

(a) from 0% to about 75% of a detergent surfactant selected from the group consisting of nonionic, anionic, cationic, zwitterionic, amphoteric and semipolar nonionic surfactants and mixtures thereof;

(b) from about 0.025 to about 10% pure enzyme selected from the group consisting of proteolytic and amylolytic enzymes and mixtures thereof;

(c) from 0 to about 60% of a low molecular weight primary or secondary alcohol selected from the group consisting of methanol, ethanol, propanol, isopropanol, polyols containing from 2 to about 6 carbon atoms and from 2 to about 6 hydroxy groups and mixtures thereof;

(d) from about 0.1% to about 10% of a short chain length carboxylic acid salt selected from the group consisting of formates, acetates, propionates and mixtures thereof;

(e) a soluble calcium salt to give from about 0.1 to about 10 millimoles of calcium ion per liter; and

(f) the balance water,

the pH of the product being from about 6.5 to about 10, the amount of calcium ion per liter being less than about 2 millimoles at pH's below about 8.5, and at pH's above 8.5, (d) is a formate.

4,318,819
CHIRAL SUPPORTS FOR RESOLUTION OF RACEMATES

Thomas P. Malloy, Lake Zurich, and Michael D. Tufano, Broadview, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Feb. 25, 1980, Ser. No. 124,396
Int. Cl.³ B01D *15/08*
U.S. Cl. 252—184 **9 Claims**

1. A composition for resolution of racemic mixtures comprising:

a. a core support selected from the group consisting of silica and alumina;

b. a spacer molecule, one terminus of which is bonded to the core support via a silicon atom; and

c. a chiral organic acid or derivative thereof covalently bonded to the remaining terminus of said spacer molecule in such manner as to retain its chirality.

4,318,820
CHIRAL SUPPORTS FOR RESOLUTION OF RACEMATES

Thomas P. Malloy, Lake Zurich, and Michael D. Tufano, Broadview, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Feb. 25, 1980, Ser. No. 124,395
Int. Cl.³ B01D *15/08*
U.S. Cl. 252—184 **6 Claims**

1. A composition for resolution of racemic material comprising an inorganic oxide selected from the group consisting of alumina and silica, impregnated with poly(aminostyrene), a substantial portion of whose amino groups are covalently bonded through an amide linkage to a chiral hydroxy acid or a derivative thereof.

4,318,821
POLYMERIC COMPOSITIONS

Glyn I. Harris, Stourbridge, and Frederick Coxon, Wollaston, near Stourbridge, both of England, assignors to Albright & Wilson Limited, Oldbury, England

Continuation of Ser. No. 407,107, Oct. 17, 1973, , which is a continuation of Ser. No. 31,057, Apr. 6, 1970, abandoned, which is a division of Ser. No. 654,357, Jul. 19, 1967, Pat. No. 3,576,788. This application Apr. 28, 1976, Ser. No. 681,124
Claims priority, application United Kingdom, Jul. 27, 1966, 33831/66; Nov. 29, 1966, 53497/66
Int. Cl.³ C09K *3/00*; C08L *61/10*; C08G *14/04*
U.S. Cl. 252—188.3 R **23 Claims**

1. A composition consisting essentially of (a) the product obtained by condensing reactant (1) a compound selected from the group consisting of aralkyl ethers of the general formula $R'(CH_2OR)_2$ and aralkyl halides of the general formula $R'(CH_2X)_2$), wherein R' is p-phenylene, R is an alkyl radical containing less than 6 carbon atoms, and X is selected from the group consisting of chlorine, bromine and iodine, with reactant (2) at least one phenol containing 1 hydroxy group attached to a carbon atom of the benzene nucleus with a total of not more than 3 substituents attached to carbon atoms of the benzene nucleus, the reactant (2) being in a proportion of between 1.3 and 3 moles per mole of reactant (1), with the elimination of the alcohol ROH, when said compound is said aralkyl ether, or the hydrogen halide HX, when said compound is said aralkyl halide and removing said ROH or said HX and carrying said condensation to substantial completion, and (b) from 10% to 20% by weight of said product of hexamethylene tetramine.

4,318,822

PRODUCTION OF AGENT FOR DESULFURIZING CRUDE IRON AND STEEL MELTS

Albert Braun, Hürth; Willi Portz, and Georg Strauss, both of Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 14, 1980, Ser. No. 149,745

Claims priority, application Fed. Rep. of Germany, May 19, 1979, 2920353

Int. Cl.³ C01B *31/32;* **C21C** *1/02, 7/064*

U.S. Cl. 252—189 **6 Claims**

1. A process for making an agent for desulfurizing crude iron and steel melts, the desulfurizing agent being based on calcium carbide containing calcium oxide, which comprises: producing, from lime and coke, a calcium carbide/calcium oxide-starting melt mixture with a CaO-content within the range 20 to 80 weight%; allowing the starting melt mixture to solidify to a block; allowing the solidified block to assume an average temperature of more than 400° C. and precrushing it at that temperature to particulate material with a size of less than 150 mm; admixing the hot crushed material of at least 400° C. with a quantity of calcium oxide necessary to have in the resulting mixture an overall content of CaO corresponding to that desired for the final product; thoroughly mixing and crushing the whole with exclusion of moisture at temperatures higher than 100° C. to particulate material with a size of less than 10 millimeters; and cooling the ground pulverulent material, with exclusion of moisture.

4,318,823

LIGHT COLORED HOMOGENEOUS AND AQUEOUS ALPHA OLEFIN SULFONATE SOLUTIONS

Shizuo Sekiguchi, Funabashi; Tetsuo Tano; Kyozo Kitano, both of Chiba, and Toshiaki Ogoshi, Funabashi, all of Japan, assignors to The Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,595

Claims priority, application Japan, Dec. 15, 1978, 53-154244

Int. Cl.³ B01F *17/02;* **C11D** *1/12;* **C07C** *139/00*

U.S. Cl. 252—353 **3 Claims**

1. A process for preparing a light colored, homogeneous, aqueous, alpha-olefin sulfonate solution which does not develop turbidity when it is allowed to stand for a long period of time, which comprises the steps of: preparing an aqueous C_{10}–C_{20} alpha-olefin sulfonate solution containing less than 10% by weight of 4-hydroxyalkane sulfonate, based on the total weight of sulfonates in said solution; then adding to and dissolving in said solution an additional quantity of separately prepared 4-hydroxyalkane sulfonate derived from C_{10}–C_{20} alpha-olefin to increase the concentration of 4-hydroxyalkane sulfonate in said solution to a value in the range of from 10 to 30% by weight, based on the total weight of sulfonates in said solution.

4,318,824

MANUFACTURE OF POROUS CARBON

Alan Turner, Hale, England, assignor to Lancashire Tar Distillers Limited, Manchester, England

Filed Aug. 4, 1980, Ser. No. 175,067

Claims priority, application United Kingdom, Aug. 16, 1979, 28587/79

Int. Cl.³ C01B *31/10, 31/12;* **B01J** *20/20, 21/18*

U.S. Cl. 252—421 **8 Claims**

1. A method of producing a porous carbon which comprises the steps of:

(1) subjecting pitch or coal to solvent extraction to produce

(i) a solid fraction which is soluble in hot quinoline and insoluble in hot toluene, warm n-heptane and warm methanol, and

(ii) a liquid fraction which is

(a) one insoluble in warm methanol but soluble in warm n-heptane, hot toluene and hot quinoline or

(b) one insoluble in warm methanol and warm n-heptane but soluble in warm toluene and hot quinoline;

(2) carbonising the first solid fraction to produce a first porous carbon;

(3) absorbing the said liquid fraction into said first porous carbon in an amount of from 5 to 25% by weight, based on the weight of the first porous carbon; and

(4) carbonising the porous carbon containing absorbed liquid to produce a second porous carbon having a specific surface area greater than that of said first porous carbon.

3. A method as claimed in claim 1, in which said solid fraction also contains up to 5% by weight of material insoluble in quinoline.

5. A method as claimed in claim 1 in which the fractions are derived from a mixture of pitch and coal dust.

4,318,825

CATALYTIC COMPOSITE, AND METHOD OF MANUFACTURE

Robert R. Frame, Ten UOP Plz., Algonquin & Mt. Prospect Rds., Des Plaines, Ill. 60016

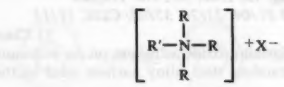
Division of Ser. No. 66,741, Aug. 15, 1979, Pat. No. 4,250,022. This application Aug. 18, 1980, Ser. No. 178,660

The portion of the term of this patent subsequent to Jun. 3, 1997, has been disclaimed.

Int. Cl.³ B01J *31/22*

U.S. Cl. 252—428 **22 Claims**

1. A method of preparing a supported metal chelate catalyst which comprises contacting a solid adsorptive support with a solution of a metal chelate and with a substituted ammonium compound represented by the structural formula



where R is a hydrocarbon radical containing up to about 20 carbon atoms and selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl and aralkyl, R′ is a substantially straight-chain alkyl radical containing from about 5 to about 20 carbon atoms, and X is an anion selected from the group consisting of halide, nitrate, nitrite, sulfate, phosphate, acetate, citrate, tartrate and hydroxide, and wherein said prepared composite is heated to a temperature below the temperature of decomposition of the metal chelate or the substituted ammonium compound.

4,318,826

CARBONYLATION CATALYSTS

Gary B. McVicker, Westfield, N.J., assignor to Exxon Research & Engineering Co., Florharm Park, N.J.

Continuation of Ser. No. 17,717, Mar. 5, 1979, abandoned, which is a division of Ser. No. 799,589, May 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 166,615, Jul. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 51,669, Jul. 1, 1970, abandoned. This application Apr. 11, 1980, Ser. No. 139,152

Int. Cl.³ B01J *31/24*

U.S. Cl. 252—431 P **2 Claims**

1. A catalyst composition comprising a mixture of:

(A) a compound selected from the group consisting of: $(C_4H_8O)_4Mg[Co(CO)_3P(C_4H_9)_3]_2$ and $(C_4H_8O)_2Mg[Rh(CO)_2(P(C_6H_5)_3)_2]_2$.

4,318,827
NONACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 32,589, Apr. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 886,329, Mar. 13, 1978, Pat. No. 4,148,715. This application Aug. 4, 1980, Ser. No. 175,549
The portion of the term of this patent subsequent to May 2, 1995, has been disclaimed.
Int. Cl.³ B01J 23/10
U.S. Cl. 252—462 15 Claims

1. A nonacidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % nickel, about 0.1 to about 5 wt. % alkali metal or alkaline earth metal, and about 0.01 to about 5 wt. % lanthanide series metal; wherein the platinum group catalytically available nickel, lanthanide series and alkali or alkaline earth components are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group component is present in the elemental metallic state; wherein substantially all of the lanthanide series component is present in a positive oxidation state; wherein substantially all of the catalytically available nickel component is present in the elemental metallic state or in a state which is reducible to the elemental metallic state or in a mixture of these states; and wherein substantially all of the alkali or alkaline earth component is present in a positive oxidation state.

4,318,828
ENHANCED OXIDE WHISKER GROWTH ON COLD-ROLLED ALUMINUM-CONTAINING STAINLESS STEEL FOIL

Lloyd R. Chapman, Powell, Tenn., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 15, 1980, Ser. No. 178,453
Int. Cl.³ B01J 21/04, 23/26, 35/02; C23C 11/12
U.S. Cl. 252—465 12 Claims

1. A method for forming oxide whiskers on an aluminum-containing ferritic stainless steel alloy surface, said method comprising

oxidizing the alloy surface by heating while exposed to an atmosphere containing oxygen in an amount effectively low for forming a whisker-precursor oxide film on said surface, and thereafter

further oxidizing said surface to grow whiskers.

4,318,829
NON-FERROUS GROUP VIII ALUMINUM COPRECIPITATED HYDROGENATION CATALYSTS

Albert P. Halluin, and Allan E. Barnett, both of Westfield, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 91,835, Nov. 6, 1979, Pat. No. 4,273,680. This application Nov. 21, 1980, Ser. No. 208,828
Int. Cl.³ B01J 21/04, 21/08, 21/12, 23/78
U.S. Cl. 252—466 J 33 Claims

1. A supported coprecipitated catalyst comprised of:

(a) one or more metals selected from the non-ferrous metals of Group VIII of the Periodic Table of the Elements.

(b) aluminum,

(c) porous particles, and

(d) one or more metals selected from Group IIA of the Periodic Table of the Elements,

said catalyst being characterized as having a B.E.T. total surface area ranging from about 150 to about 350 m^2/g, wherein the total amount of Group VIII metal in the catalyst ranges from about 25 wt. % to about 70 wt. %, and the total amount of the Group IIA metal in the catalyst is up to about 10 wt. %, both amounts of metals being based on the total weight of the catalyst after calcination and reduction, and wherein said catalyst has been prepared by coprecipitating the aluminum ions, the Group IIA and Group VIII metal ions with the solid porous particles.

4,318,830
THICK FILM CONDUCTORS HAVING IMPROVED AGED ADHESION

Samuel J. Horowitz, Snyder, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 15, 1979, Ser. No. 3,196
Int. Cl.³ H01B 1/06
U.S. Cl. 252—519 8 Claims

8. A thick film conductor composition consisting essentially of:

(A) 63 parts by weight of the composition of a conductive phase composed of a Ag/Pt powder mixture in the ratio of 8:1;

(B) 14 parts by weight of the composition of an inorganic binder composed of a lead alumina borosilicate bismuthate glass and $Cu_{0.5}Bi_{1.5}Ru_2O_{6.5}$ in the ratio of 6:1;

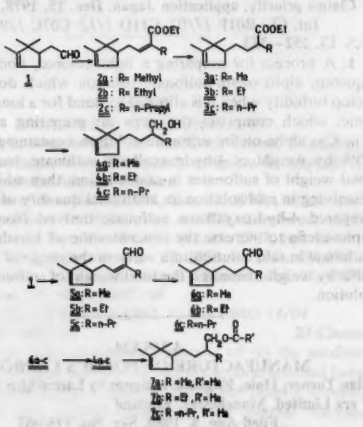
(C) 1 part by weight of the composition of Co_3O_4; and

(D) 22 parts by weight of the composition of organic vehicle.

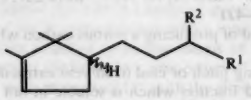
4,318,831
POLYSUBSTITUTED CYCLOPENTENE DERIVATIVES

Erich Klein, and Ernst J. Brunke, both of Holzminden, Fed. Rep. of Germany, assignors to Dragoco Gerberding & Co GmbH, Holzminden, Fed. Rep. of Germany

Filed Jun. 15, 1979, Ser. No. 48,731
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1978, 2827957
Int. Cl.³ A61K 7/46; C07C 33/12, 69/007
U.S. Cl. 252—522 R 3 Claims



1. A compound of the general formula:



wherein R^1 represents a lower alkyl group with 1–3 carbon atoms and R^2 represents a hydroxymethyl, acetoxymethyl, or formyl group, and the wavy line signifies epimeric forms at carbon atom 1.

4,318,832

AQUEOUS DISPERSIONS OF EPOXIDE COMPOUNDS

Karl Zabrocki, Buettgen; Hans Schulze, Cologne; Franz Weider, Leverkusen; Wolfgang Wellner, Cologne, and Wolfgang Schartau, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 25, 1980, Ser. No. 181,066

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1979, 2934951

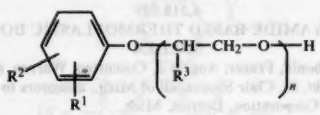
Int. Cl.³ C08L 63/02

U.S. Cl. 523—402 6 Claims

1. An aqueous dispersion of an epoxide compound comprising 40 to 50% by weight of water, 40 to 50% by weight of one or more water-insoluble 1,2-epoxide compounds having mol weights $\overline{M}n$ of from between 150 and 3000 and 8 to 18% by weight of an emulsifying system comprising:

(A) from 9.5 to 35% by weight of at least one polyester resin containing carboxyl groups having an acid number of from 10 to 50 mg KOH/g substance and a molecular weight $\overline{M}n$ of from 400 to 4000, at least 30% of the carboxyl groups being neutralised;

(B) from 0.5 to 25% by weight of at least one emulsifier having an HLB-value ≧15 and represented by the formula:



wherein

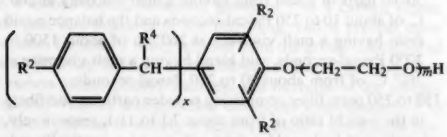
R^1 represents a C_1–C_{16}-alkyl group,

R^2 represents H or a C_1–C_{16}-alkyl group,

R^3 represents H or methyl,

n represents a number from 10 to 50;

(C) from 40 to 90% by weight of at least one emulsifier having an HLB-value of ≧15 and the general formula:



wherein

R^2 is previously defined,

R^4 represents C_1–C_4-alkyl group,

x is a number of from 2.0 to 3.0 and

m is a number from 15 to 100, the total of the percentage contents from A,B and C being 100%.

4,318,833

WATER REDUCIBLE COATING COMPOSITIONS OF ACRYLIC-URETHANE POLYMERS

Matthew Guagliardo, Bloomfield, N.J., assignor to Inmont Corporation, Clifton, N.J.

Filed May 16, 1980, Ser. No. 150,466

Int. Cl.³ C08L 75/04

U.S. Cl. 524—457 8 Claims

1. A water reducible storage stable coating composition comprising a polymer of

(a) about 2 to about 7 parts ethylenically unsaturated monomer, polymerized in the presence of

(b) one part fully reacted water soluble polyurethane.

4,318,834

METHOD FOR PRODUCING AN AQUEOUS LIQUID DISPERSION OF POLYMERS

Hiroshi Ohmura, Chita, and Masaharu Nakayama, Nagoya, both of Japan, assignors to Nippon Oil and Fats Company Limited, Tokyo, Japan

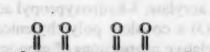
Filed Sep. 29, 1980, Ser. No. 192,161

Claims priority, application Japan, Oct. 2, 1979, 54-127056; Oct. 12, 1979, 54-131528; Mar. 22, 1980, 55-36516

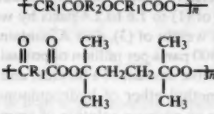
Int. Cl.³ C08L 73/00

U.S. Cl. 524—457 11 Claims

1. A method for producing an aqueous liquid dispersion of polymers, which comprises: in a first copolymerization step, copolymerizing one or more polymeric peroxides selected from the group consisting of compounds having the formulas (I) and (II),

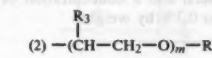


(I)



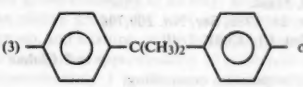
(II)

wherein R_1 is alkylene having 1 to 18 carbon atoms or phenylene, R_2 is (1) alkylene having 2 to 10 carbon atoms,

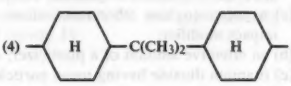


(2)

wherein R_3 is hydrogen or methyl, R_4 is alkylene having 2 to 10 carbon atoms, m is an integer of 1 to 13,



(3) or



(4)

and n is from 2 to 20,

with a first monomer component consisting essentially of one or more vinyl monomers selected from the group consisting of

(1) vinyl monomer A which is copolymerizable with said polymeric peroxides and polymers of which are soluble in a solvent C selected from the group consisting of water, organic solvents which are soluble in water, organic solvents whose solubility in water is from 7 to 25 percent by weight, and mixtures thereof, and

(2) vinyl monomer B which is copolymerizable with said polymeric peroxides and polymers of which are insoluble in said solvent C,

thereby obtaining copolymers having peroxy bonds therein; then, in a second copolymerization step, subjecting said copolymers having peroxy bonds therein to block copolymerization, in the presence of said solvent C, with a second monomer component consisting essentially of one or more of said vinyl monomers, which second monomer component is different in composition from said first monomer component used in the first copolymerization step, whereby to form a block copolymer in which the polymer blocks formed in one of said first and second copolymerization steps are dissolved in said solvent C and the polymer blocks formed in the other of said first and second copolymerization steps are insoluble in said solvent C and form dispersed particles therein.

4,318,835

MAGNESIUM DIACRYLATE, POLYOL MONOACRYLATE GROUTING COMPOSITION AND METHOD FOR GROUTING JOINTS AND/OR CRACKS IN SEWER CONDUITS THEREWITH

William J. Clarke, Ridgewood, N.J., assignor to Hayward Baker Company, Odenton, Md.

Filed Jul. 21, 1980, Ser. No. 170,474
Int. Cl.[3] C08L 33/02
U.S. Cl. 264—36 14 Claims

1. A two-part chemical grouting composition adapted to be applied upon admixture to an earth formation to control liquid flow therethrough, one part A thereof being an aqueous 10 to 24 weight % monomer solution in which the monomers therein consist essentially of a mixture of (1) a predominant proportion of magnesium diacrylate, (2) 2-hydroxyethyl acrylate, 2-hydroxypropyl acrylate, 3-hydroxypropyl acrylate, or a mixture thereof, and (3) a covalent polyethylenically unsaturated monomer, the relative proportions of monomers being 8 to 10 parts by weight of (1) to 1.6 to 2.4 parts by weight of (2) to 0.25 to 0.40 part by weight of (3), part A containing triethanolamine, from 20 to 300 parts per million of potassium ferricyanide, a small but effective amount of a biocide, and a small but effective amount of methyl ether of hydroquinone stabilizer, the other part B being an aqueous solution of ammonium persulfate at a concentration to provide in the grout mixture applied to the grouting site of the earth formation at least about 0.3% by weight of ammonium persulfate, about 10 to 12 weight % of monomers, and a concentration of triethanolamine of at least about 0.3% by weight.

4,318,836

TITANIUM DIOXIDE FILLED POLYPHENYLENE ETHER COMPOSITIONS

Visvaldis Abolins, Delmar, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Nov. 24, 1980, Ser. No. 209,796
Int. Cl.[3] C08K 5/49
U.S. Cl. 524—141 9 Claims

1. A thermoplastic composition comprising:

(a) a polyphenylene ether resin, alone, or together with an impact modifier;

(b) an effective amount of a plasticizer; and

(c) titanium dioxide having mean particle size no greater than 0.6 micron.

4,318,837

ADHESIVE FOR WOOD AND VINYL

Roger L. Streets, Mansfield, and John Von Kamp, New London, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 28, 1975, Ser. No. 608,478
Int. Cl.[3] C08L 67/06
U.S. Cl. 524—364 7 Claims

1. An adhesive composition composed of a fluid blend of 100 parts of a saturated polyester of 10,000 to 30,000 molecular weight composed of the condensation product of an organic dicarboxylic acid or anhydride with a glycol and 5 to 150 parts of an unsaturated polyester of 10,000 to 30,000 molecula weight containing 5 to 15 parts of an organic polyiisocyanate selected from the class consisting of 4,4'-diphenylene methane diisocyanate, tolylene diisocyanate, 4,4'-tolidine diisocyanate and polymethylene polyphenyl isocyanates, said unsaturated polyester containing unsaturation from condensation of an organic acid or anhydride selected from the class of maleic and fumaric acid or anhydride with a glycol and sufficient solvent selected from the class consisting of ketones of acetone to isopropylbutyl ketone and blends of said ketones with toluene and xylene to permit the adhesive to be painted during its pot life.

4,318,838

POLYURETHANE SEALANT COMPOSITIONS

James A. Gallagher, Grosse Ile, and Bernardas Brizgys, Southgate, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Apr. 14, 1980, Ser. No. 139,929
Int. Cl.[3] C08L 75/08
U.S. Cl. 524—444 6 Claims

1. A polyurethane sealant composition prepared by

(a) mixing a polyether polyol or polyether polyol blend having a branching unit density of 400 grams to 700 grams per branching with an inorganic filler selected from the group consisting of calcium silicate, aluminum silicate, magnesium silicate, and mixtures thereof, said filler being added in an amount which is from 0.15 part to 0.7 part by weight per part by weight of polyether polyol or polyether polyol blend, and

(b) reacting the mixture made in accordance with paragraph (a) with an organic polyisocyanate such that the ratio of isocyanate groups of the polyisocyanate to the hydroxyl groups of the polyether polyol is 1.0:1 to 1.2:1.

4,318,839

POLYAMIDE BASED THERMOPLASTIC BODY SOLDER

John Newbould, Fraser; Angelo J. Cosentino, Warren, and Paul E. Wright, St. Clair Shores, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 23, 1981, Ser. No. 227,715
Int. Cl.[3] C08L 77/06
U.S. Cl. 524—538 3 Claims

1. A thermoplastic filler reinforced body solder composition comprised in parts by weight of

100 parts of a blend of polyamide resins consisting essentially of condensation products of dicarboxylic acids having the structure $HOOC-(CH_2)_n-COOH$ where n is 6 to 12 and hexamethylene diamine, said blend comprising from about 50–80 parts of a said resin having a melt viscosity at 260° C. of about 10 to 250 Pascal-seconds and the balance a said resin having a melt viscosity at 260° C. of about 1500 to 2000 Pascal-seconds, said blend having a melt viscosity at 260° C. of from about 90 to 250 Pascal-seconds;

150 to 250 parts filler comprising powder particles and fibers in the weight ratio of from about 7:1 to 11:1, respectively,

wherein said body solder does not sag on a vertically oriented substrate at 204° C., does not crack after 30 test cycles consisting of 18 hours at 37.7° C. in 100% relative humidity followed by 2 hours at −23° C. followed by 4 hours in 5 percent aqueous salt spray at 95° C., and does not crack under a 1.7 joule impact at −29° C.

4,318,840

BINDERS FOR FOUNDRY CORE SANDS

James E. Doyle, Carpentersville, and Russell B. Lembke, Crystal Lake, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Dec. 17, 1980, Ser. No. 217,450
Int. Cl.[3] C08G 8/04; C08L 61/06
U.S. Cl. 523—144 8 Claims

4. A process for manufacturing foundry sand shapes for use as cores and molds comprising placing a sand mix in a shaping element and hardening the mix in the shaping element, the sand mix comprising sand, an acid catalyst and a binder comprising the product prepared by dissolving in furfuryl alcohol the bottoms from distillation of 2,2-bis-(4-hydroxyphenyl)propane and reacting therewith paraformaldehyde.

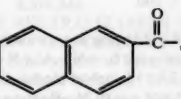
4,318,841

POLYESTER OF 6-HYDROXY-2-NAPHTHOIC ACID, PARA-HYDROXY BENZOIC ACID, TEREPHTHALIC ACID, AND RESORCINOL CAPABLE OF READILY UNDERGOING MELT PROCESSING TO FORM SHAPED ARTICLES HAVING INCREASED IMPACT STRENGTH

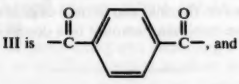
Anthony J. East, Madison, and Gordon W. Calundann, N. Plainfield, both of N.J., assignors to Celanese Corporation, New York, N.Y.

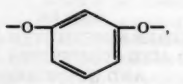
Filed Oct. 6, 1980, Ser. No. 194,196
Int. Cl.³ C08G *63/60*
U.S. Cl. 524—605 **30 Claims**

1. A melt processable wholly aromatic polyester capable of forming an anisotropic melt phase at a temperature below approximately 350° C. consisting essentially of the recurring moieties I, II, III, and IV which may include substitution of at least some of the hydrogen atoms present upon an aromatic ring wherein:

I is  ,

II is ,

III is  , and

IV is  ,

with said optional substitution if present on moieties I and II being selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, and mixtures of the foregoing, and if present upon moieties III and IV being selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, phenyl, halogen, and mixtures of the foregoing, and wherein said polyester comprises approximately 5 to 60 mole percent of moiety I, approximately 5 to 70 mole percent of moiety II, approximately 10 to 45 mole percent of moiety III, and approximately 10 to 45 mole percent of moiety IV.

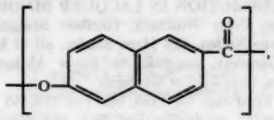
4,318,842

POLYESTER OF 6-HYDROXY-2-NAPHTHOIC ACID, AROMATIC DIOL, AND 1,4-CYCLOHEXANEDICARBOXYLIC ACID CAPABLE OF UNDERGOING MELT PROCESSING

Anthony J. East, Madison, and Gordon W. Calundann, North Plainfield, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Oct. 6, 1980, Ser. No. 194,199
Int. Cl.³ C08G *63/60*
U.S. Cl. 524—605 **37 Claims**

1. A melt processable polyester capable of forming an anisotropic melt phase at a temperature below approximately 350° C. consisting essentially of the recurring moieties I, II, III, and IV which may include substitution of at least some of the hydrogen atoms present upon the rings wherein

I is  ,

II is a dioxyaryl moiety of the formula

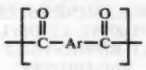
—O—Ar—O—

where Ar is a divalent radical comprising at least one aromatic ring,

III is

wherein at least approximately 90 percent of said III units are in the trans configuration, and

IV is a dicarboxyaryl moiety of the formula



where Ar is a divalent radical comprising at least one aromatic ring,

with said optional substitution if present being selected from the group consisting of an alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, a phenyl group, and mixtures of the foregoing, and wherein said polyester comprises approximately 20 to 90 mole percent of moiety I, approximately 5 to 40 mole percent of moiety II, approximately 10 to 40 mole percent of moiety III, and approximately 0 to 30 mole percent of moiety IV.

4,318,843

INORGANIC PIGMENTS WITH IMPROVED GLOSS AND GOOD DISTRIBUTION IN LACQUER BINDERS

Klaus Köhler; Peter Woditsch; Heribert Stütgens; Eckhard Bayer; Klaus Nollen, and Hans Sander, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 16, 1980, Ser. No. 159,745
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1980, 2924850
Int. Cl.³ C09C *3/08, 3/10, 3/12*
U.S. Cl. 523—212 **10 Claims**

1. An inorganic pigment with improved gloss and distribution in a lacquer binder having a coating of a SiOH-containin-gorganosilicon compound with more than three Si atoms and an alkanolamine.

4,318,844

INORGANIC PIGMENTS WITH IMPROVED GLOSS AND DISTRIBUTION IN LACQUER BINDERS

Klaus Köhler; Peter Woditsch; Heribert Stü'gens; Eckhard Bayer; Klaus Nollen, and Hans Sander, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 16, 1980, Ser. No. 159,746

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1979, 2924849

Int. Cl.[3] **C09C** *3/08, 3/10, 3/12*

U.S. Cl. 524—212 **11 Claims**

1. An inorganic pigment exhibiting improved gloss and distribution in lacquer binders, carrying a coating comprising a polyhydrogen siloxane and an alkanolamine.

4,318,845

ALKANOLAMINE ESTERS OF 1,1'-BIPHENYL-2,2'-DIYL-AND ALKYLIDENE-1,1'-BIPHENYL-2,2'-DIYL-CYCLIC PHOSPHITES

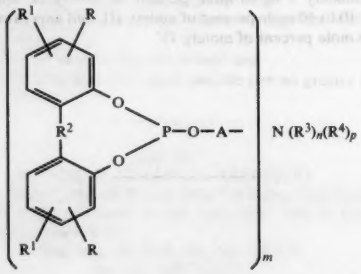
John D. Spivack, Spring Valley; Martin Dexter, Briarcliff Manor, and Stephen D. Pastor, Spring Valley, all of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 24, 1980, Ser. No. 209,786

Int. Cl.[3] **C08K** *5/52;* **C07D** *295/08, 221/00*

U.S. Cl. 524—91 **24 Claims**

1. A compound of the formula



wherein m, n and p are each 1, m is 2 and n is 1 and p is 0 or m is 3 and n and p are 0, and wherein

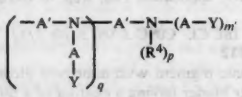
R is alkyl of from 1 to 18 carbon atoms,

R^1 is hydrogen or alkyl of from 1 to 18 carbon atoms,

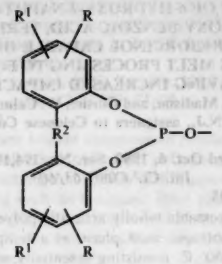
R^2 is a direct bond or alkylene of from 1 to 12 carbon atoms,

A is alkylene of from 1 to 6 carbon atoms, or cycloalkylene of 5 to 6 carbon atoms,

R^3 is alkyl of 1 to 18 carbon atoms, or



wherein Y is



A' is alkylene of 1 to 6 carbon atoms or cycloalkylene of 5 to 6 carbon atoms,

m' is 1 or 2,

p is 0 or 1, and

q is 0–5,

with A, R, R^1, R^2 being as previously defined; provided that when p and q are 0, —N—A'—N can be a diazacycloalkyl group of 2 to 10 carbon atoms, or

when m is 1 and p is 0, N—R_3 is a azacycloalkyl group of 2 to 10 carbon atoms or an azaoxacycloalkyl group of 3 to 7 carbon atoms; and

R^4 is alkyl of 1 to 18 carbon atoms.

16. A composition of matter comprising an organic material subject to oxidative, thermal and actinic degradation stabilized with an effective stabilizing amount of a compound of claim **1** or **2**.

4,318,846

NOVEL ETHER SUBSTITUTED FLUORESCEIN POLYAMINO ACID COMPOUNDS AS FLUORESCERS AND QUENCHERS

Pyare Khanna, Mountain View, and Edwin F. Ullman, Atherton, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Sep. 7, 1979, Ser. No. 73,163

Int. Cl.[3] **A61K** *39/385, 39/44;* **C07G** *7/00*

U.S. Cl. 260—112 B **22 Claims**

1. A chromogenic compound capable of donating or accepting electronic energy, which is a 2,7-di(aliphatic chalcogen ether substituted) or 4,5-di(aliphatic chalcogen ether substituted)-9-substituted-6-hydroxy-3H-xanthen-3-one, wherein chalcogen is of atomic number 8 to 16, conjugated to a poly(amino acid).

4,318,847

PHYSIOLOGICALLY ACTIVE TETRAPEPTIDES

Hamao Umezawa, Tokyo; Takaaki Aoyagi, Fujisawa; Tomio Takeuchi, Tokyo, and Taiji Inui, Chigasaki, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

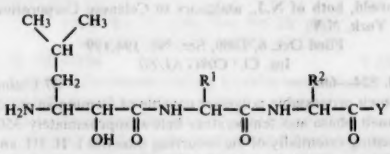
Filed Jul. 11, 1980, Ser. No. 167,586

Claims priority, application Japan, Jul. 13, 1979, 54-89551

Int. Cl.[3] **C07C** *103/52*

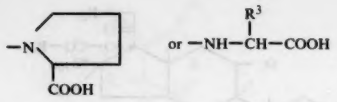
U.S. Cl. 260—112.5 R **25 Claims**

1. Tetrapeptide derivatives of the formula (I):



(I)

wherein R^1 and R^2 are methyl, 1-methylethyl, 2-methylpropyl, 1-hydroxyethyl, 2-carboxyethyl or 4-aminobutyl and Y is



wherein R^3 is methyl, 1-methylethyl, 2-methylpropyl, 1-methylpropyl, hydroxymethyl, 1-hydroxyethyl, carboxymethyl, 2-carboxyethyl, 4-aminobutyl, 3-guanidinopropyl, benzyl or p-hydroxybenzyl excluding the compounds in which R^1 and R^2 are each 1-methylethyl and also R^3 is carboxymethyl or 2-carboxymethyl, the first and leftmost β-amino acid moiety in said tetrapeptide derivatives having the (2S,3R)-configuration and a primary amino group and the second, third and fourth α-amino acid moieties in said tetrapeptide derivatives having the L-configuration.

4,318,848

PROCESS FOR THE NEUTRALIZATION OF BASIC REACTION COMPOSITIONS

Hans-Heinz Mölls; Willy Schiwy, both of Leverkusen; Reinhold Hörnle, Cologne, and Reinhard Nebeling, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 3, 1978, Ser. No. 866,523

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1977, 2700291

Int. Cl.[3] **C07C** *105/00, 107/04, 107/06, 107/08*

U.S. Cl. 260—143 **4 Claims**

1. A method of neutralizing and dispersing a reaction product obtained in an alkaline reaction medium during synthesis and requiring dispersion in industrial use consisting essentially of adding a free surface-active acid comprising the condensation product of formaldehyde and an aromatic sulfonic acid to the alkaline reaction medium after the reaction is completed to both neutralize and disperse the reaction product.

4,318,849

NOVEL METALLIZED DYES, THEIR MANUFACTURE AND USE

Arthur Bühler, Rheinfelden, and Hans U. Schütz, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 904,358, May 9, 1978, Pat. No. 4,215,042, which is a continuation of Ser. No. 589,963, Jun. 24, 1975, abandoned. This application May 5, 1980, Ser. No. 146,973

Claims priority, application Switzerland, Jul. 16, 1974, 9764/74; May 27, 1975, 6750/75

Int. Cl.[3] **C09B** *45/24*

U.S. Cl. 260—148 **4 Claims**

1. A copper, nickel, chromium or cobalt complex of a dye of the formula

$$Y—D—N=CH—E—Y'$$

wherein D is benzene or naphthalene, Y is an —OH, —OCH_3, or —COOH group, Y' is an —OH, —OCH_3 or amino group, provided that Y and Y' are not both an —OCH_3 group, and E is o-hydroxybenzaldehyde or o-hydroxynaphthaldehyde, and wherein one of the groups D or E contains a group of the formula

$$-(N=N=Ar)_m-Z-R_2-U$$

wherein Z is a bridge member of the formula —SO_2—, —$SO_2N(R_1)$— or —CO—$N(R_1)$—, wherein R_1 is hydrogen or a low molecular weight alkyl group, R_2 is a low molecular weight alkylene group or an arylene group, Ar is an arylene group, m is 1 or 2 and U is a sulfo or carboxy group, and wherein D and E, besides carrying this group, can carry only non-ionogenic substituents which do not impart solubility in water except that together D and E can carry at most one additional sulfo group.

4,318,850

CARBOXAMIDE TYPE AZOMETHINE PIGMENTS

Fumihiko Yamamoto, Kawasaki; Mitsuru Katayose; Kyugo Tanaka, both of Yokohama, and Teruyuki Misumi, Kawasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

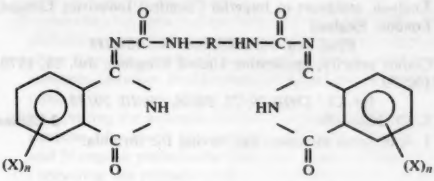
Filed May 9, 1980, Ser. No. 148,498

Claims priority, application Japan, May 16, 1979, 54-59110

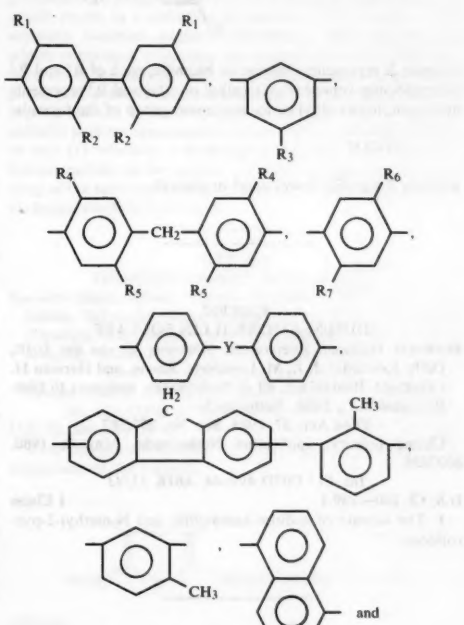
Int. Cl.[3] **C09B** *43/155, 55/00, 57/04;* **D06P** *1/13*

U.S. Cl. 260—152 **43 Claims**

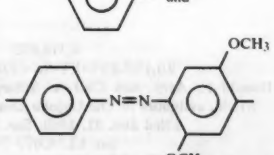
1. A compound of the formula,



wherein R is an aromatic compound selected from the group consisting of:



and



wherein R_1, R_2, R_3, R_4, R_5R_6 and R_7, which may be the same or different, are each selected from the group consisting of hydrogen, chlorine, a C_{1-2} alkyl group and a C_{1-2} alkoxy group and wherein Y is —SO_2—, —O—, —S—, —CO—, —N=N— or —NHCO—; X is a halogen atom selected from the group consisting of chlorine, bromine, and fluorine; and n is zero or an integer of from 1 to 4.

4,318,851

DISPERSE MONOAZO DYES, THEIR PREPARATION AND THEIR APPLICATION TO SYNTHETIC TEXTILE MATERIALS

Peter W. Austin, Bury, and Brian R. Fishwick, Cheshire, both of England, assignors to Imperial Chemical Industries Limited, London, England

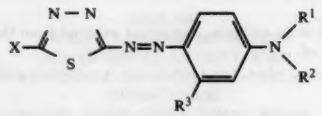
Filed Jun. 16, 1980, Ser. No. 159,915

Claims priority, application United Kingdom, Jul. 26, 1979, 26100/79

Int. Cl.³ C09B *29/22, 29/06, 29/10, 29/24*

U.S. Cl. 260—158 **2 Claims**

1. A disperse monoazo dye having the formula:



wherein X represents chlorine or bromine, each of R^1 and R^2 independently represents C_{1-9} alkyl or allyl and R^3 represents hydrogen, lower alkyl or an acylamino group of the formula:

—NHCOT

wherein T signifies lower alkyl or phenyl.

4,318,852

SODIUM AMOXICILLIN SOLVATE

Herwarth Heitman, Zoetermeer; Johannes K. van der Drift, Delft; Everardus J. A. M. Leenderts, Rhoon, and Herman H. Grootveld, Benthuizen, all of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Filed Apr. 27, 1981, Ser. No. 257,747

Claims priority, application Netherlands, May 8, 1980, 8002636

Int. Cl.³ C07D *499/44;* **A61K** *31/43*

U.S. Cl. 260—239.1 **1 Claim**

1. The solvate of sodium amoxicillin and N-methyl-2-pyrrolidone.

4,318,853

9β,11β-EPOXY-5β-CORTICOIDS

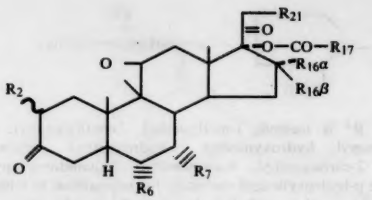
Donald E. Ayer, and Carl A. Schlagel, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 31, 1980, Ser. No. 117,401

Int. Cl.³ C07J *7/00*

U.S. Cl. 260—239.55 R **20 Claims**

1. A 5β-9,11-epoxy steroid of the formula:



(II)

where R_2, R_6, R_7, $R_{16\alpha}$, $R_{16\beta}$, R_{17}, R_{21} and ~ are defined in the specification.

4,318,854

INTERMEDIATES IN THE PRODUCTION OF 2-BENZAZEPINES

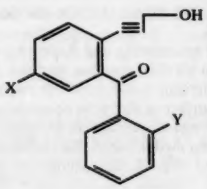
Eugene J. Trybulski, Parsippany, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 10,118, Feb. 7, 1979, abandoned. This application May 16, 1980, Ser. No. 150,509

Int. Cl.³ C07C *49/248;* **C07D** *209/34*

U.S. Cl. 260—326 A **6 Claims**

1. A compound of the formula



wherein X and Y are selected from the group consisting of hydrogen, halogen and trifluoromethyl.

4,318,855

PROCESS FOR THE PREPARATION OF ALPHA-HYDROXYCARBONYL COMPOUNDS

Ulrich Huber, Zurich, and Hans-Jakob Wild, Meilen, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Filed Jan. 24, 1980, Ser. No. 114,938

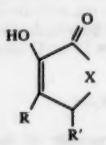
Claims priority, application Switzerland, Feb. 2, 1979, 1024/79; Dec. 14, 1979, 11104/79

The portion of the term of this patent subsequent to Jan. 1, 1997, has been disclaimed.

Int. Cl.³ C07D *307/32;* **C07C** *49/597*

U.S. Cl. 260—343.6 **30 Claims**

1. A process for the manufacture of α-hydroxycarbonyl compounds of the formula:



I

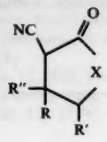
wherein:

R represents methyl or ethyl;

R′ represents hydrogen, methyl or ethyl; and

X represents oxygen, $>CH_2$, $>CHCH_3$ or $>CHCH_2CH_3$;

which comprises oxidizing a compound of the formula:

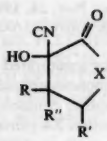


III

wherein:

R″ represents hydrogen when X is oxygen and represents —COOR‴ or hydrogen when X is not oxygen; and

R‴ represents hydrogen or an alkyl group of from one to six carbons; with a caroate to provide a cyanohydrin of the formula



II

and subjecting said cyanohydrin II to a cyanohydrin cleavage and, when R″ is —COOR‴, cleaving off the —COOR‴ group.

4,318,856

ANTIBACTERIAL COMPOUNDS

Kong Luk, Cranleigh; John P. Clayton, Horsham, and Norman H. Rogers, Rudgwick, all of England, assignors to Beecham Group Limited, England

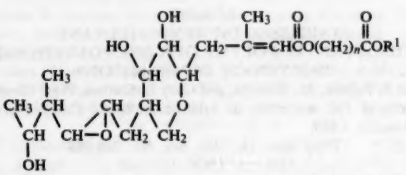
Continuation of Ser. No. 872,806, Jan. 27, 1978, Pat. No. 4,235,784, which is a division of Ser. No. 803,466, Jun. 6, 1977. This application Jan. 14, 1980, Ser. No. 111,728

Claims priority, application United Kingdom, Jun. 15, 1976, 24712/76; Sep. 29, 1976, 40472/76; Mar. 1, 1977, 8647/77

Int. Cl.³ C07D *309/22*

U.S. Cl. 260—345.8 R **12 Claims**

1. A compound of the formula:

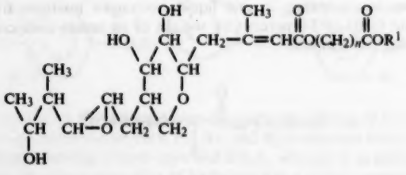


wherein

R^1 is hydrogen, a salt forming ion or alkyl of 1 to 6 carbon atoms; and

n has a value of 1 to 7.

11. A compound of the formula:



wherein

R^1 is hydrogen, a salt forming ion or alkyl of 1 to 6 carbon atoms; and

n has a value of 9 to 20.

4,318,857

METHOD FOR MAKING AROMATIC BIS (ETHER ANHYDRIDES)

Jimmy L. Webb, Ballston Lake, N.Y., and Donald L. Phipps, Pittsfield, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 3, 1981, Ser. No. 251,019

Int. Cl.³ C07D *307/83*

U.S. Cl. 260—346.3 **6 Claims**

1. In the process of making aromatic bis(ether phthalic anhydride) comprising

(1) effecting an exchange reaction between aromatic bis(ether N-organophthalimide) and phthalic anhydride in the presence of water and triorganoamine exchange catalyst,

(2) extracting the resulting aqueous exchange reaction mixture with an organic solvent,

(3) separating the resulting aromatic bis(ether phthalic acid), phthalic acid and triorganoamine catalyst in the aqueous phase from the resulting N-organo phthalimide, unreacted aromatic bis(ether N-organophthalimide) and triorganoamine in the organic phase,

(4) recovering the aromatic bis(ether phthalic acid) from the aqueous phase and the aromatic bis(ether phthalimide) and N-organo phthalimide from the organic phase, and

(5) recycling the phthalic acid and triorganoamine catalyst to the exchange mixture of step (1) and recycling the organic solvent to the extractor of step (2),

whereby a constant concentration build-up occurs of the triorganoamine exchange catalyst in the extracting organic solvent, which results in a reduction in the rate of production of the aromatic bis(ether phthalic anhydride), the improvement which comprises, extracting the organic solvent before it is recycled to the extractor of step (2) with an aqueous mixture of phthalic acid and triorganoamine and thereafter recycling the organic solvent to the extractor of step (2), and the aqueous phthalic acid-triorganoamine catalyst to the exchange reaction of step (1) whereby a build-up of the concentration of the triorganoamine in the organic solvent is avoided and a recycling of the recovered triorganoamine exchange catalyst to the exchange reaction is effected.

4,318,858

THIOETHYLAMIDE DERIVATIVES

Kentaro Hirai, Kyoto; Shigeru Matsutani, Sakai; Teruyuki Ishiba, Takatsuki; Itsuo Makino, Kobe; Masami Doteuchi, Hirakata, and Koichi Otani, Kawachinagano, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

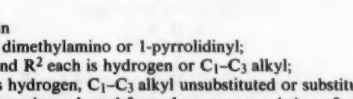
Filed Dec. 2, 1980, Ser. No. 212,222

Claims priority, application Japan, Dec. 7, 1979, 54-159510

Int. Cl.³ C07D *307/52, 207/04, 333/18, 307/52*

U.S. Cl. 260—347.2 **4 Claims**

1. A compound selected from the group consisting of a compound of the formula:



wherein

R is dimethylamino or 1-pyrrolidinyl;

R^1 and R^2 each is hydrogen or C_1–C_3 alkyl;

R^3 is hydrogen, C_1–C_3 alkyl unsubstituted or substituted by a member selected from the group consisting of cyano, C_1–C_3 alkoxy and phenyl,

C_3–C_6 cycloalkyl,

C_2–C_5 alkenyl unsubstituted or substituted by one member selected from the group consisting of C_1–C_3 alkoxy, phenyl and phenoxy,

or C_6–C_{10} aryl unsubstituted or substituted by one or two members selected from the group consisting of hydroxy, halogen, nitro, sulfamoyl, C_1–C_3 alkoxy, C_1–C_3 alkanoyl, C_2–C_4 alkoxycarbonyl, C_2–C_4 dialkylamino and C_1–C_3 alkanesulfonyl

and X is oxygen or sulfur

or a pharmaceutically acceptable acid addition salt thereof.

4,318,859

PROCESS FOR THE PREPARATION OF BASIC DYESTUFFS

Karl H. Hermann, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

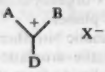
Filed Nov. 23, 1979, Ser. No. 96,724

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1978, 2853822

Int. Cl.[3] **C07C** *15/12;* **C09B** *11/04, 11/10;* **C07D** *209/04*

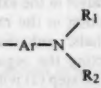
U.S. Cl. 260—388 **3 Claims**

1. Process for the preparation of basic dyestuffs of the general formula



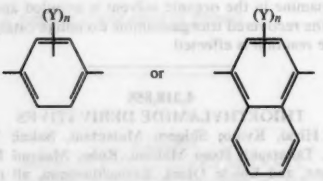
in which

A and B independently of one another represent a heteroaromatic radical or a radical of the general formula



in which

Ar denotes the grouping



in which

Y represents hydrogen or a non-ionic substituent and

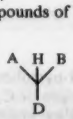
n represents a number between 1 and 4, and

R_1 and R_2 represent hydrogen or alkyl, aryl or aralkyl which is optionally substituted by non-ionic or acid groups, or together, or with the o-position of Ar, form a heterocyclic ring,

D denotes hydrogen, alkyl, aryl which is optionally substituted by neutral or acid groups, or a heteroaromatic radical and

X^- represents an anion,

characterised in that compounds of the general formula



in which

A,B and D have the abovementioned meaning, are oxidised with oxygen in the presence of catalytic amounts of benzoquinones which are substituted by halogen or cyano or of phenanthrenequinones which are substituted by nitro, and in the presence of a catalytic amount of nitrogen monoxide, nitrogen dioxide, sodium nitrite or iron-III nitrate.

4,318,860

PREPARATION OF UNSATURATED MONESTER PRECURSOR FOR PELARGONIC ACID

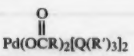
Chao-Yang Hsu, Media, and Haven S. Kesling, Jr., Drexel Hill, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 80,353, Sep. 28, 1979, abandoned. This application Nov. 24, 1980, Ser. No. 209,625

Int. Cl.[3] **C07C** *15/00*

U.S. Cl. 260—405.5 **6 Claims**

1. A process for producing unsaturated methyl nonadienoate and methyl nonatrienoate monoesters useful as precursors for pelargonic acid which comprises contacting, in a reaction inert medium, butadiene and methyl-2,4-pentadienoate in a molar ratio of 2:1 to 10:1 at a temperature of 40° to 120° C. under an inert atmosphere and in the presence of a catalytic amount of a homogeneous palladium (II) complex of the formula



wherein R is alkyl, chloroalkyl, bromoalkyl or fluoroalkyl having from 1 to 6 carbon atoms or aryl having 6 to 12 carbon atoms; Q is phosphorous or arsenic and R′ is alkyl, aminoalkyl or alkoxy having 1 to 6 carbon atoms or aryl or aryloxy having 6 to 12 carbon atoms.

4,318,861

STABILIZED DIPHENYLMETHANE DIISOCYANATE-POLYMETHYLENE POLYPHENYL ISOCYANATE COMPOSITIONS

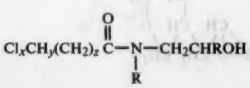
John S. Babiec, Jr., Berwyn, and Gary L. Statton, West Chester, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 18, 1981, Ser. No. 244,848

Int. Cl.[3] **C07C** *119/048*

U.S. Cl. 260—453 SP **5 Claims**

1. A method for the storage stabilization of liquid diphenylmethane diisocyanate-polymethylene polyphenyl isocyanate mixtures derived from the thermal decomposition of the corresponding diphenylmethane dicarbamates and polymethylene polyphenyl carbamates prepared by the acid condensation of N-aryl carbamic acid ester with formaldehyde, which comprises incorporating in said liquid isocyanate mixtures from about 0.001 to 1.0 percent by weight of an amide compound having the formula



wherein R is hydrogen or an alkyl group having from 1 to 4 carbon atoms, x plus y is equal to 3 and z is an integer of from 0 to 3.

4,318,862

PROCESS FOR PRODUCING DIMETHYLCARBONATE

Ugo Romano, Vimercate; Franco Rivetti, Schio, and Nicola Di Muzio, Peschiera Borromeo, all of Italy, assignors to Anic S.p.A., Palermo, Italy

Filed Nov. 12, 1980, Ser. No. 205,949

Claims priority, application Italy, Dec. 4, 1979, 27816 A/79

Int. Cl.³ C07C *69/96*

U.S. Cl. 260—463 4 Claims

1. In a process for producing dimethylcarbonate by the reaction of methanol with oxygen and carbon monoxide in the presence of a copper salt catalyst, the improvement which comprises the utilization of a starting gaseous reactant containing hydrogen in addition to carbon monoxide and oxygen and the obtention of a by-product synthesis gas stream enriched in hydrogen content.

4,318,863

SUBSTITUTED TRICYCLODECANE DERIVATIVES, PROCESSES FOR PRODUCING SAME AND ORGANOLEPTIC USES THEREOF

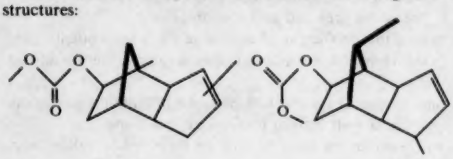
Mark A. Sprecker, Sea Bright, and John B. Hall, Rumson, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 144,898, Apr. 29, 1980, Pat. No. 4,275,251. This application Dec. 29, 1980, Ser. No. 220,632

Int. Cl.³ C07C *69/96*

U.S. Cl. 260—463 2 Claims

1. A mixture of tricyclic esters defined according to the structures:



4,318,864

PROCESS FOR MAKING S-PHENENYLTRIS(SULFONYLIMINO)TRI-BENZENE MONO- AND DI-SULFONIC ACIDS AND SALTS

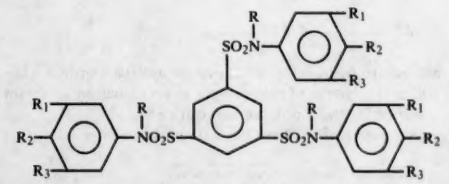
Ransom B. Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 104,614, Dec. 17, 1979, Pat. No. 4,265,908, which is a division of Ser. No. 973,313, Dec. 26, 1978, Pat. No. 4,208,346. This application Dec. 15, 1980, Ser. No. 216,720

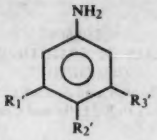
Int. Cl.³ C07C *143/56*

U.S. Cl. 260—510 1 Claim

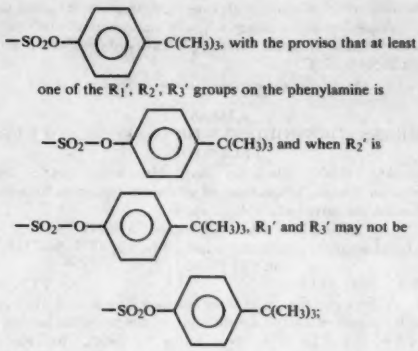
1. A method for the preparation of a compound of the formula:



wherein each R is selected from the group consisting of hydrogen and alkali metal; each R_1, R_2, and R_3 is selected from the group consisting of hydrogen and SO_3A, wherein A is selected from the group consisting of hydrogen and a pharmaceutically acceptable salt cation; provided that at least one of the R_1, R_2, R_3 groups on each phenyl is SO_3A; and further provided that when R_2 is SO_3A, R_1 and R_3 may not be SO_3A; which comprises reacting 1,3,5-benzenetrisulfonyl chloride with a compound of the formula:



wherein R'_1, R'_2, R'_3 are each selected from the group consisting of hydrogen and



in an organic nitrogen base for over one hour; acidifying with a mineral acid; treating the resulting ester with alkali metal C_1–C_6 alkoxide in dimethylsulfoxide at an elevated temperature for about one hour; acidifying with an organic acid; reprecipitating from absolute C_1–C_6 alkanol in the presence of an alkali metal acetate to yield the alkali metal salt, and optionally displacing said alkali metal cation with another pharmaceutically acceptable salt cation.

4,318,865

PRODUCTION OF 2-CHLOROFORMYLETHYLMETHYLPHOSPHINIC ACID CHLORIDES

Alexander Ohorodnik, Erftstadt; Hubert Neumaier, Brühl, and Klaus Gehrmann, Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

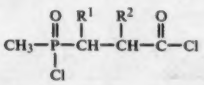
Filed Sep. 8, 1980, Ser. No. 185,154

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 2936609

Int. Cl.³ C07F *9/34*

U.S. Cl. 260—543 P 6 Claims

1. A process for making 2-chloroformylethylmethylphosphinic acid chlorides of the general formula:



in which R^1 and R^2 each stand for hydrogen or CH_3, by reacting methyldichlorophosphane with an α,β-unsaturated carboxylic acid selected from the group consisting of acrylic acid, methacrylic acid or crotonic acid at elevated temperatures, which comprises: using a solution of methyldichlorophosphane in phosphorus trichloride, the solution originating from a reaction of phosphorus trichloride with methane at tempera-

tures higher than 500° C.; effecting the reaction at temperatures within the range 50° to 90° C. in the presence of hydrogen chloride; and distilling off the phosphorus trichloride.

4,318,866

CHLORINATION OF 4-METHOXYBENZOYL CHLORIDE

Roger L. Robey, Greenwood, and Jeffrey C. Smirz, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 10, 1980, Ser. No. 139,050
Int. Cl.³ C07C 65/21
U.S. Cl. 260—544 D **4 Claims**

1. An improved process for preparing 4-trichloromethoxybenzoyl chloride by chlorinating 4-methoxybenzoyl chloride with molecular chlorine at elevated temperature, wherein the improvement consists of carrying out the reaction neat in the absence of light of radical-forming intensity at from about 150° C. to about 225° C.

4,318,867

PROCESS FOR PRODUCING DIFLUOROIODOACETYL FLUORIDE

Masaaki Yamabe, Machida; Seiji Munekata, Tokyo, and Seisaku Kumai, Yokohama, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed May 19, 1980, Ser. No. 150,919
Claims priority, application Japan, Jun. 12, 1979, 54-73020
Int. Cl.³ C07C 51/58
U.S. Cl. 260—544 F **9 Claims**

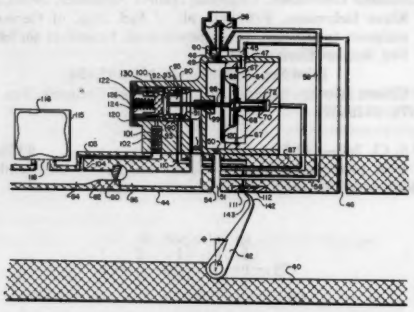
1. A process for producing difluoroiodoacetyl fluoride which comprises a step of producing an intermediate having a group of $ICF_2CF_2OSO_2$- by reacting 1,2-diiodotetrafluoroethane with an oxidizing acid or agent having an S(VI) atom and selected from the group consisting of sulfur trioxide, fuming sulfuric acid, fluorosulfonic acid and chlorosulfonic acid, and a step of decomposing said intermediate into said product.

4,318,868

ANALOG CARBURETOR

M. Robert Showalter, Madison, Wis.; John M. Clark, Jr., and J. Wray Fogwell, both of San Antonio, Tex., assignors to Automotive Engine Associates, Madison, Wis.

Continuation-in-part of Ser. No. 136,084, Mar. 31, 1980, abandoned. This application Mar. 20, 1981, Ser. No. 246,028
Int. Cl.³ F02M 7/22
U.S. Cl. 261—41 D **30 Claims**



1. An air fuel metering system for an internal combustion engine including an intake manifold,

an air flow passage feeding said intake manifold, said airflow passage having a variable area air flow orifice valve therein,

a fuel flow passage having a variable area flow orifice valve therein, means for controlling in a mutually variable manner the air flow variable orifice area valve and the fuel flow variable orifice area valve whereby the ratio of the effective areas of the air flow orifice area to the fuel flow is maintained in approximate proportion,

means to regulate the pressure drop across the fuel orifice to be proportional to the pressure drop across the upstream orifice of a two orifice in series air-flow system consisting of an upstream chamber openly connected to the air pressure upstream of the air flow orifice; an upstream orifice connecting said upstream chamber and an intermediate chamber provided with an air pressure balancing system with one side of said balancing system at upstream chamber pressure and the other side at an intermediate chamber pressure and a downstream orifice connecting said intermediate chamber with a chamber openly connected to the pressure downstream of said variable area air flow orifice valve where the pressure drop across the variable area fuel orifice is regulated with a feed-back fuel flow restriction control which equilibrates when pressure drop across the fuel orifice is in proportion to the force from said air pressure balancing system; and wherein

the variable area fuel flow orifice valve obeys the flow relation

$$\dot{M}_f = A_f C_f \sqrt{2g\rho_f \Delta P_f}$$

where $A_f = L(A_a)$ (fixed exact functional relation between fuel valve area and air valve area)

where the coefficient of discharge C_f is substantially constant over the Reynolds number range relevant for any set A_f

and where ΔP_f is the fuel pressure differential across the valve at well defined pressure tap positions

and wherein the variable area air flow orifice valve obeys the flow relation

$$\dot{M}_a = \phi A_a C_a \sqrt{2g\sigma\rho_a(\Delta P_a)}$$

where $A_f = g(A_a)$ in an exact mathematical relation and where A_f and A_a vary in rough proportion

where the air valve is so shaped that C_a is effectively invariant over the operating range of Mach number of the device,

where ΔP_a is the difference between upstream stagnation pressure and downstream vena contracta static pressure

and wherein the means to regulate the pressure drop across the fuel orifice to be proportional to the pressure drop across the upstream orifice of a two orifice in series flow system obeys one of the following equations

$$\Delta P_f = K_1 \Delta P_{Ou} + K_2 \text{ or}$$

$$\Delta P_f = K_3 \Delta P_{Ou} + K_3 P_{fuel\ downstream}$$

and where ΔP_{Ou} is the ΔP across an upstream orifice

where the system of two orifices in series has an upstream orifice O_u and a downstream orifice O_d

where each orifice obeys the following equation

$$\dot{M}aoi = \phi oi A oi C oi \sqrt{2g\sigma oi \rho oi(\Delta P oi)}$$

and where

$$A_{Od}C_{Od} << A_{Ou}C_{Ou}$$

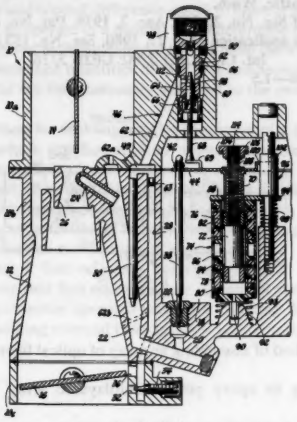
so that ΔP_{Ou} is proportional to M_a^2/A_aC_a so that M_f/M_a is regulated to a constant proportion.

4,318,869

CARBURETOR

Donald D. Stoltman, Henrietta, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 17, 1981, Ser. No. 234,701
Int. Cl.³ F02M 7/18
U.S. Cl. 261—50 R 3 Claims



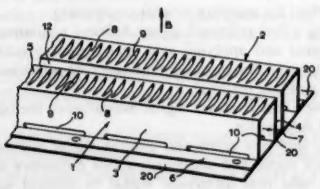
1. A carburetor comprising a fuel passage, a metering apparatus reciprocable in rich and lean directions, said metering apparatus including a metering element adapted to effect an increase in fuel flow through said passage as said metering apparatus moves in said rich direction and a decrease in such fuel flow as said metering apparatus moves in said lean direction, a helically wound coil spring having a number of active turns biasing said metering apparatus in one of said directions with a force related to the position of said metering apparatus and to the number of such turns, said metering apparatus further including a linear motor armature connected to said metering element, a linear motor winding energizable for urging said metering apparatus in the other of said directions with a force related to the current through said winding, whereby the position of said metering apparatus and thus the fuel flow through said passage varies with such current, said calibration means for varying said number of active turns in said coil spring to thereby establish the position of said metering apparatus and thus the fuel flow through said passage for a selected current through said winding.

4,318,870

DISTILLATION PLATE

Geoffrey G. Haselden, 12, High Ash Dr., Leeds, England

Filed Nov. 21, 1979, Ser. No. 96,466
Claims priority, application United Kingdom, Nov. 22, 1978, 45535/78; Nov. 22, 1978, 45680/78; Mar. 28, 1979, 10805/79
Int. Cl.³ B01F 3/04
U.S. Cl. 261—114 JP 7 Claims



1. In combination,

(a) a mass transfer plate for combining vapor and liquid to form a two-phase mixture; and

(b) a baffle system comprising:

(i) a series of elongated spaced channels within which said two-phase mixture is formed, each channel having a pair of side walls attached to and extending upwardly from said plate and defining a fluid flow path beginning at said plate and extending upwardly between said side walls;

(ii) a first series of apertures formed in each channel, the associated fluid flow path extending out of the associated channel through said first series of apertures;

(iii) deflector means attached to said first series of apertures for deflecting a portion of said two-phase mixture in a direction longitudinally along the channels; and

(iv) second apertures formed in the side walls of each channel at a position below said first apertures and proximal to said plate for allowing liquid separated from said two-phase mixture to re-enter the channels; and

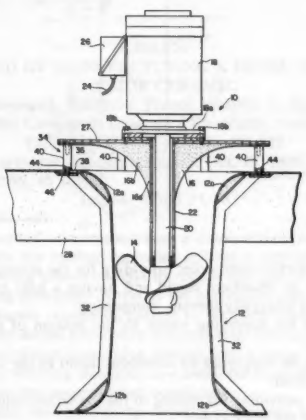
(v) further including liquid return zones defined by the space between laterally adjacent spaced channels for enabling liquid disengaged from said two-phase mixture to pass from said first apertures through said second apertures into said laterally adjacent channels.

4,318,871

MOUNTING RING CONSTRUCTION FOR SURFACE AERATOR APPARATUS

H. C. Mentz, 1002 W. Nine Mile Rd., Highland Springs, Va. 23075

Filed Feb. 22, 1980, Ser. No. 123,840
Int. Cl.³ B01F 3/04; C02F 1/74
U.S. Cl. 261—120 10 Claims



1. A surface aerator apparatus comprising an upright throat section the lower end of which, in use, is immersed in the body of liquid to be aerated; a float for supporting said throat section so as to form a throat section-float combination, said float being adapted to be buoyantly supported on the body of liquid and having a vertically extending opening through which said throat section extends; an impeller located in said throat section; a drive shaft connected to said impeller for driving said impeller so as to pump liquid upwardly through said throat section for discharge therefrom; a fixed deflector section mounted above the said throat section for laterally deflecting liquid pumped up through said throat section and including a support plate and a separate integral curved wall portion against which the liquid impinges, drive means mounted on said deflector section and connected to said drive shaft, said

drive means comprising a drive motor including a mounting base; and a mounting means for supporting said deflector section, said drive means, said drive shaft, and said impeller in fixed, spaced relationship relative to said throat section-float combination, said mounting means comprising a mounting ring construction comprising the integral combination of an upper ring connected to said support plate, a lower ring affixed to said throat section-float combination and a plurality of upright support rods extending between said upper and lower rings so as to support the rings in spaced relationship, said rods being disposed in spaced relationship around the circumference of the rings so as to define a plurality of openings therebetween through which, in use, liquid pumped upwardly through the throat section is discharged, bolt means for bolting said support plate to said mounting ring construction, said bolt means comprising a plurality of bolts which extend through said support plate into said support rods of said mounting ring construction and further bolt means for bolting said mounting base of said drive motor to said support plate.

4,318,872

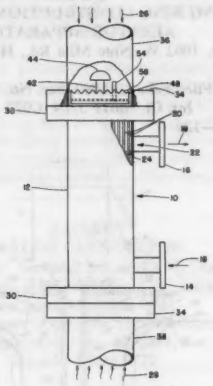
ABSORBER INTERCOOLER

Giuliano Romano, Englewood, N.J., assignor to National Distillers & Chemical Corp., New York, N.Y.

Filed Jan. 14, 1980, Ser. No. 112,003

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—140 A **6 Claims**



1. An absorber intercooler providing for the absorption of a vapor into an absorbent liquid and having a heat exchanger constructed integrally therein, comprising:

a. means for supplying vapor to the bottom of the intercooler;

b. means for supplying an absorbent liquid to the top of the intercooler;

c. means providing for mixing of the vapor and liquid absorbent in the intercooler;

d. a heat exchanger constructed as an integral part of the absorber intercooler having a cylindrical outer casing with refrigerant inlet and outlet ports, said ports having a coolant flow longitudinally therebetween in said heat exchanger, a tube bundle extending longitudinally within said cylindrical casing, said heat exchanger comprising upper and lower end plates, through which said tube bundle extends, to seal the upper and lower ends of the tube bundle; and

e. said absorber intercooler further comprising a vapor flow pipe centrally disposed in said cylindrical casing and longitudinally extending along the length and to the top of the intercooler to enable only vapor to flow therethrough to the top of the intercooler in a direction opposite to the flow of liquid absorbent and vapor mixture, and from which it flows down said tube bundle with the liquid absorbent opposite to the direction of the coolant flowing in said heat exchanger.

4,318,873

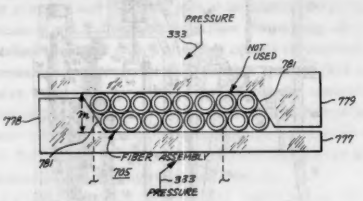
METHOD OF BONDING AN ARRAY OF OPTICAL FIBERS

David R. Porter, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Division of Ser. No. 26,372, Apr. 2, 1979, Pat. No. 4,261,641. This application May 27, 1980, Ser. No. 153,815

Int. Cl.³ B29D *3/00*; G02B *5/16*

U.S. Cl. 264—1.5 **1 Claim**



1. A method of assembling an array of optical fibers comprising:

preparing an epoxy potted multilayered array of optical fibers;

selecting a pair of generally L-shaped transparent fixtures with a bottom foot of said L-shaped transparent fixtures having a step height less than the thickness of said multilayered array and the inner surface of said bottom foot cut in at about 30 degrees;

sandwiching said multilayered array between said pair of generally L-shaped transparent fixtures;

compressing said multilayered array of optical fibers by applying pressure against said pair of generally L-shaped transparent fixtures in an inward direction towards the central plane of said multilayered array of optical fibers;

applying further inward pressure in a direction perpendicular to the inner surface of the feet of said generally L-shaped transparent fixtures; then,

curing said epoxy potted multilayered array of optical fibers to provide an integrated multilayered array of said optical fibers.

4,318,874

MOLDING APPARATUS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 483,037, Jun. 25, 1974, Pat. No. 4,120,922, and a continuation-in-part of Ser. No. 297,452, Oct. 13, 1972, Pat. No. 3,820,928, which is a continuation of Ser. No. 849,014, Aug. 11, 1969, abandoned, which is a continuation-in-part of Ser. No. 721,401, Apr. 15, 1968, Pat. No. 3,616,495, and Ser. No. 421,817, Dec. 29, 1964, and Ser. No. 439,549, Mar. 15, 1965. This application Oct. 10, 1978, Ser. No. 950,017

Int. Cl.³ B29F *1/06*

U.S. Cl. 264—40.1 **5 Claims**

1. A method for molding articles comprising:

generating a first reference signal defining a command control signal and applying said first signal to initiate the operation of a first motor operating a first prime mover for a first molding material,

generating a first feedback signal indicative of the operation of said first motor,

summing said first command control signal and said first feedback signal and generating a first difference signal,

applying said first difference signal to control said first motor to operate in a manner to predetermine the flow of said first molding material to said mold cavity,

generating a second reference command signal and applying said second command signal to initiate operation of a second motor operating a second prime mover for a second molding material,

generating a second feedback signal indicative of the operation of said second motor,

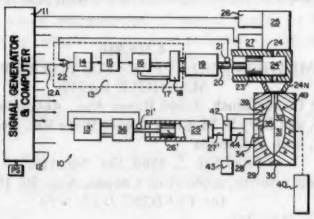
summing said second command signal and said second feedback signal and generating a second difference signal and

applying said second difference signal to control said second motor to operate in a manner to predetermine the flow of said second molding material to said mold cavity whereby predetermined quantities of said first and second molding material are simultaneously admitted to the cavity of said mold.

2. A method for molding articles composed of a plurality of materials which are flowed from separate supplies of such materials comprising:

controllably flowing first and second liquid molding materials from respective first and second reservoirs, each containing supplies of said first and second molding materials, to a common mold cavity of a mold by:

generating a first reference command control signal and applying said first control signal to control the operation of a first motor operated means for effecting flow of said first molding material from said first reservoir to said mold cavity,



generating a first feedback signal indicative of the rate of flow of said first molding material from said first reservoir to said mold cavity,

summing said first command control signal and said first feedback signal to generate a first difference signal, and

applying said first difference signal to control said first motor operated means to cause said first molding material to predeterminately flow to said mold cavity,

generating a second reference command control signal and applying said second command signal to control the operation of a second motor operated means for effecting flow of said second molding material from said second reservoir to said mold cavity,

generating a second feedback signal indicative of the rate of flow of said second molding material from said second reservoir to said mold cavity,

summing said second command control signal and said second feedback signal to generate a second difference signal, and

applying said second difference signal to control said second motor operated means to cause said second molding material to predeterminately flow to said mold cavity whereby predetermined quantities of said first and second molding materials predeterminately enter said mold cavity.

4,318,875

PROCESS FOR THE PRODUCTION OF CELLULAR ELASTOMERIC COMPOSITIONS AND COMPOSITIONS OBTAINED THEREBY

Ronald H. Shrimpton, Lichfield, and Peter L. Cooney, Walmley, both of England, assignors to Dunlop Limited, London, England

Continuation-in-part of Ser. No. 114,370, Jan. 22, 1980, abandoned. This application Nov. 26, 1980, Ser. No. 210,738

Claims priority, application United Kingdom, Feb. 17, 1979, 05650/79

Int. Cl.³ B29H *7/20*

U.S. Cl. 264—54 **10 Claims**

1. A process for the production of a core for a tennis-ball or a bat sponge for a table-tennis bat, said core or sponge consisting of a cross-linked, cellular, elastomeric composition derived from a formulation including (i) at least one elastomeric material selected from the group consisting of natural rubber and synthetic rubbers, (ii) a cross-linking agent, (iii) at least one monomeric salt of an ethylenically-unsaturated carboxylic acid and (iv) a blowing agent, wherein said process includes the steps of

(a) thoroughly mixing the said elastomeric material and the said salt without the application of heat thereto;

(b) transferring the mixture (a) to a cooled mixer and dispersing therein the said cross-linking agent and the said blowing agent;

(c) extruding the mixture (b) through a die and cutting the extrudate into slugs;

(d) moulding each slug in a pre-heated mould and maintaining the mould at the temperature of pre-heating until decomposition of the blowing agent occurs;

(e) transferring each moulding (d) to a second pre-heated mould and maintaining said second mould at the temperature of pre-heating until completion of the cross-linking occurs.

4,318,876

METHOD OF MANUFACTURING A DENSE SILICON CARBIDE CERAMIC

Daniel Broussaud, Palaiseau, France, assignor to Societe Anonyme dite: Compagnie Generale d'Electricite, Paris, France

Filed Oct. 3, 1980, Ser. No. 193,827

Claims priority, application France, Oct. 19, 1979, 79 26064; Aug. 27, 1980, 80 18566

Int. Cl.³ C04B *35/56*

U.S. Cl. 264—65 **14 Claims**

1. A method of manufacturing a dense silicon carbide ceramic body, the method including milling a particulate material containing silicon carbide to reduce the size of the particles, adding powdered boron to the particulate material; adding a substance containing carbon to the particulate material, forming the milled particulate material after adding the boron and the substance containing carbon into a body of desired shape, and sintering said body at a temperature of about 2100° C., wherein the improvement comprises:

heat treating said particulate material containing silicon carbide, the silicon carbide consisting of alpha silicon carbide powder, in a vacuum at a temperature higher than 1200° C. and no more than 1600° C. prior to adding said substance containing carbon.

4,318,877

VIDEO DISC MOLDING PROCESS

Thomas E. Smith, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

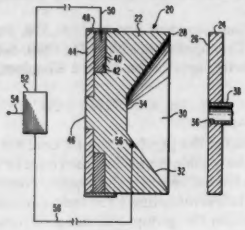
Filed Dec. 28, 1979, Ser. No. 108,029

Int. Cl.³ B29D *17/00*

U.S. Cl. 264—107 **3 Claims**

1. In a method of making a recorded disc, including the steps of, extruding a heated molding composition from an extruder into a mold cup, forming said molding composition into a

preform in said mold cup, and pressing said preform of molding composition between a pair of heated platens of a record press to form the recorded disc, the improvement comprising maintaining said molding composition at an elevated temperature between said extruding and pressing steps by employing a heated mold cup to form said molding composition into said preform, whereby the resultant recorded disc is of improved quality.



4,318,878

MANUFACTURING METHOD FOR SOAP BARS

Hans W. Hörnig, Horb, Fed. Rep. of Germany, assignor to Blendax-Werke R. Schneider GmbH & Co., Mainz, Fed. Rep. of Germany

Filed Jun. 16, 1980, Ser. No. 159,709

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925228

Int. Cl.³ C11D *13/08, 13/12, 13/16, 13/18*

U.S. Cl. 264—148 **7 Claims**

1. A process for the production of a compound bar of soap, said bar comprising a primary piece of soap and at least one secondary piece of soap embedded therein, said process comprising

(a) extruding said primary piece and each said secondary piece at an extrusion temperature of 35° to 45° C.,

(b) cooling each said secondary piece below said extrusion temperature to a cooled temperature of 25° to 35° C.,

(c) forming a cavity in the surface of said primary piece prior to said embedding adapted to receive at least one said secondary piece,

(d) stamping a pattern in the bottom of said cavity,

(e) embedding each said secondary piece in a cavity, said primary piece having a viscosity low enough to permit flow during embedding, and said secondary piece having a viscosity high enough to substantially prevent flow during embedding.

5. The process according to claim 1 wherein said secondary piece is cut to predetermined size and shape.

4,318,879

MOLDING WORKPIECES COMPRISING A METAL CORE EMBEDDED IN PLASTIC MATERIAL

Johann Gärtner, Leonding, Austria, assignor to Silhouette-Modellbrillen Frabrikationsgesellschaft m.b.H., Linz, Austria

Filed Nov. 28, 1980, Ser. No. 211,106

Claims priority, application Austria, Dec. 13, 1979, 7856/79

Int. Cl.³ B29C *6/02*

U.S. Cl. 264—163 **6 Claims**

1. In a process of manufacturing workpieces comprising a metal core embedded in plastic material, wherein the metal core is placed in a mold and gripped at one end and the mold is then filled with a plastic charge, the improvement residing in that

that end of the metal core which is opposite to its ends to be gripped is connected to a tensile element by a joint which constitutes a rated breaking point which has a lower ultimate tensile strength than any other portion of said metal core and tensile element,

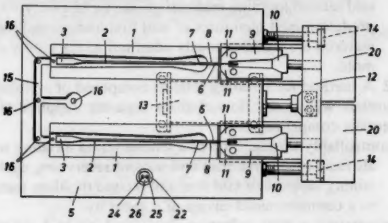
the metal core is placed in the mold so that the tensile element extends out of the mold and is adapted to subject the metal core to tensile stress,

during the filling of the mold with the plastic charge until the mold is substantially but less than completely filled with the plastic charge, the metal core is subjected by means of said tensile element to a tensile stress that is lower than the ultimate tensile strength of said rated breaking point,

the metal core is subjected by means of said tensile element to a tensile stress in excess of the ultimate tensile strength of said rated breaking point to sever the tensile element from said metal core when the mold is substantially but less than completely filled with the plastic charge,

the severed tensile element is pulled out of the mold, and

the mold is then completely filled with plastic composition.



4,318,880

METHOD AND APPARATUS FOR FORMING MANHOLE BASES

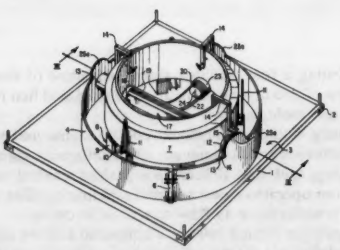
Robert G. McIntosh, 32666 Bevan Ave., Abbotsford, B.C. V2T 1G6, and Gary S. McKinney, 4621 River Rd., Delta, B.C. V4K 1R9, both of Canada

Filed Feb. 5, 1980, Ser. No. 118,715

Claims priority, application Canada, Aug. 30, 1979, 334782

Int. Cl.³ B29C *1/12, 1/14*

U.S. Cl. 264—267 **9 Claims**



1. A method of constructing a manhole base comprising the steps of:

a. providing a substantially level casting bed;

b. supporting a preformed manhole barrel on said bed at a predetermined height thereabove;

c. securing at least two pipe stubs to the barrel at selected peripheral locations thereof and at selected heights relative thereto, said pipe stubs having open interior ends; connecting the interior ends of selected ones of said pipe stubs with an inflatable and deflatable channel form tube by inserting opposed wing shaped ends thereof into selected interior stub ends, followed by inflating said form tube to expand the ends thereof as well as a generally cylindrical intermediate portion thereof including side

portions secured outwardly thereon, with said inflated side portions of said intermediate portion forming upper vertical portions of the channel to be formed in the base to be poured;

e. providing an outer form on said casting bed to delimit the outer periphery of said manhole base;

f. pouring concrete within said outer form and within said barrel to a predetermined height;

g. removing the outer form after the concrete has set;

h. deflating said ends and said intermediate portion to collapse said side portions of the form tube away from channel side walls formed by the tube in the concrete; and

i. removing said form tube from the base.

4,318,881

METHOD FOR ANNEALING PTC COMPOSITIONS

Umesh K. Sopory, San Jose, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed May 19, 1980, Ser. No. 150,911
Int. Cl.³ B29C *25/00*
U.S. Cl. 264—346 **29 Claims**

23. A method of modifying the electrical characteristics of an electrical heater which comprises (a) a PTC element composed of a melt-extruded conductive polymer composition exhibiting PTC behavior and (b) at least two electrodes which can be connected to a source of electrical power and when so connected cause current to flow through the PTC element, said conductive polymer composition comprising

(i) a polymer component which comprises a mixture of a first crystalline fluorinated polymer having a first melting point T_1 which is from 100° C. to 175° C. and a second crystalline fluorinated polymer having a second melting point T_2 which is at least 160° C. and at least (T_1+50)°C., the ratio by weight of the first polymer to the second polymer being from 1:2 to 2:1, and

(ii) a particulate filler component which has been dispersed in said polymer component and which comprises a conductive carbon black; which method comprises annealing said heater at a temperature T_A which is between (T_1+5)°C. and (T_2+40)°C. for a time sufficient to reduce the resistivity at 25° C. of said conductive polymer composition from a first value, ρ_o, prior to said annealing to a second value, ρ_A after said annealing, where ρ_A is less than $0.6\times\rho_o$ and is from 10^2 to 10^5 ohm.cm.

4,318,882

METHOD FOR PRODUCING A COLLAPSE RESISTANT POLYESTER CONTAINER FOR HOT FILL APPLICATIONS

Purushottam D. Agrawal, South Windsor, Conn., and John F. Mandell, Wayland, Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 20, 1980, Ser. No. 123,100
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—521 **20 Claims**

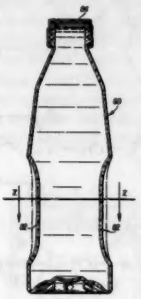
1. A method for producing a collapse resistant, molecularly oriented, heat set polyester container for use in hot fill applications, said method comprising the steps of:

(a) forming in a mold cavity a molecularly oriented polyester container having at least one preselected region which projects inwardly into said container in a first configuration;

(b) heating said oriented container while in contact with the cavity walls at a temperature sufficient to induce rapid crystallization of the polyester to form a heat set container, at least said region being heated to a temperature and for a time sufficient to produce from about 28% to about 32% crystallinity in said region;

(c) reshaping said region outwardly to a second configuration at a temperature from just above the hot fill product temperature up to the heating temperature of step (b); and

(d) cooling the resulting container while maintaining said region in said second configuration to provide a thermoelastically deformable region which tends to return to said first configuration after hot filling and sealing said resulting container to at least partially relieve pressure forces which tend to collapse said container after hot filling and sealing.



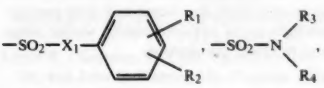
4,318,883

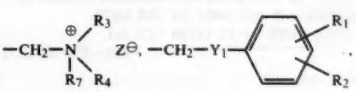
PROCESS FOR COMBATING MICRO-ORGANISMS, AND NOVEL PHTHALOCYANINE COMPOUNDS

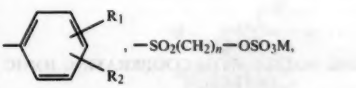
Rudolf Polony, Basel; Gerhard Reinert, Allschwil; Gerd Hölzle, Liestal; Andre Pugin, Riehen, and Rodolphe Vonderwahl, Reinach, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

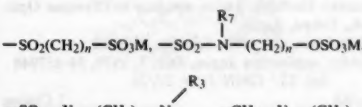
Continuation of Ser. No. 888,589, Mar. 20, 1978, abandoned. This application Feb. 15, 1980, Ser. No. 121,955
Claims priority, application Switzerland, Mar. 25, 1977, 3809/77
Int. Cl.³ A61L *2/08, 2/18*
U.S. Cl. 422—22 **26 Claims**

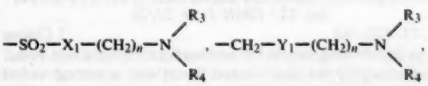
1. A process for combatting microorganisms in or on organic or inorganic substrates and for protecting said substrates against attack by microorganisms, which comprises treating the substrates with an effective amount of a watersoluble phthalocyanine derivative, which is a metal-free phthalocyanine derivative or a metal complex thereof which contains, as the metal atom, aluminum, zinc, iron-II, calcium, magnesium, sodium or potassium, said derivative contains, as groups conferring solubility in water, sulpho or carboxyl groups and their salts, or groups of the formulae











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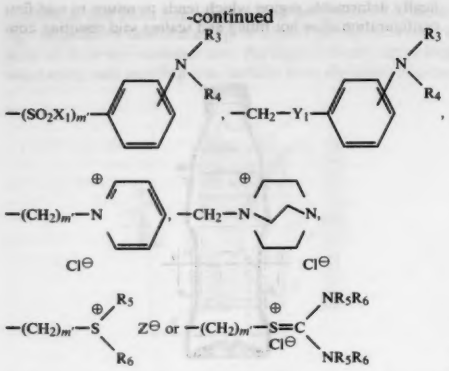


in which formula X_1 is oxygen or a —NH— or —N-alkyl radical and R_1 and R_2 independently of one another are hydrogen, a sulpho groups and salts thereof, a carboxyl group and salts thereof or a hydroxyl group, at least one of the radicals R_1 and R_2 being a sulpho or carboxyl group or a salt thereof, Y_1 is oxygen, sulphur or a —NH— or —N-alkyl radical, R_3 and R_4 independently of one another are hydrogen, alkyl, hydroxyalkyl, cyanoalkyl, sulphoalkyl, carboxyalkyl or halogenoalkyl having 1 to 6 carbon atoms, unsubstituted phenyl or phenyl substituted by halogen, alkyl or alkoxy having 1 to 4 carbon atoms, sulpho or carboxyl, or R_3 and R_4 together with the nitrogen atom to which they are bonded are a saturated 5-membered or 6-membered heterocyclic ring, which additionally can also contain a nitrogen atom or oxygen atom as a ring member, R_5 and R_6 independently of one another are substituted or unsubstituted alkyl or aralkyl radical, R_7 is a substituted or unsubstituted alkyl group having 1 to 6 carbon atoms, or hydrogen, M is an alkali metal ion or ammonium ion, Z^{θ} is an anion, for example a chlorine, bromine, alkyl-sulphate or aralkyl-sulphate ion, n is an integer from 2 to 12 and m' is 0 or 1, the number of groups conferring solubility in water, which can be of the same type or different, being at least sufficiently large to ensure that an adequate solubility in water is obtained, said phthalocyanine derivative also optionally containing other substitutes in addition to the groups conferring solubility in water, the amount of said phthalocyanine derivative employed being insufficient to cause substantial discoloration of the substrate, in the presence of oxygen and water and with concurrent irradiation with light in the infra-red and/or visible range of sufficient intensity to effect disinfection.

4,318,884

DISTRIBUTING NOZZLE WITH COOPERATING IONIC DETECTOR

Nobuyoshi Suzuki, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

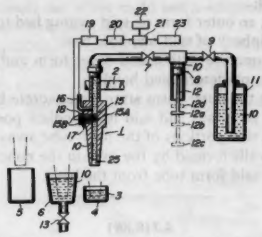
Filed Nov. 25, 1980, Ser. No. 210,362

Claims priority, application Japan, Dec. 7, 1979, 54-157948

Int. Cl.³ G01N *1/14, 27/26*

U.S. Cl. 422—63 **7 Claims**

1. A distributing nozzle for sucking liquid from a first vessel and discharging the thus sucked liquid into a second vessel comprising, an ionic sensor formed of an insulated-gate field-effect transistor mounted at such portion of said distributing nozzle that comes in contact with said liquid, whereby specified ionic concentration of said liquid is measured as said liquid is sucked and discharged by said distributing nozzle.



4,318,885

LIQUID TREATING DEVICE FOR CHEMICAL ANALYSIS APPARATUS

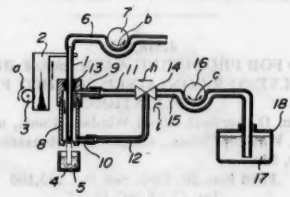
Nobuyoshi Suzuki, Hachioji, and Shigeru Yoshinari, Tokyo, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 5, 1980, Ser. No. 184,320

Claims priority, application Japan, Sep. 10, 1979, 54-115105; Oct. 8, 1979, 54-138339[U]

Int. Cl.³ G01N *1/14, 27/26*

U.S. Cl. 422—68 **6 Claims**



1. A liquid treating device for chemical analysis apparatus comprising a nozzle for sucking a liquid to be treated thereinto, a liquid transfer pipe having one end connected to said nozzle, a liquid sucking means connected to the end of said liquid transfer pipe, a cylindrical member for surrounding the front end portion of said nozzle and arranged displaceably relative to said nozzle, means for displacing said nozzle relative to said cylindrical member in the axial direction thereof, and a wash liquid supply means selectively connected to said cylindrical member and for supplying a wash liquid into said cylindrical member, whereby said wash liquid supply means is operative when the front end portion of said nozzle is located in said cylindrical member to supply said wash liquid into said cylindrical member and said liquid sucking means is operative to suck said wash liquid into said nozzle, thereby washing the inner and outer walls of said nozzle.

4,318,886
AUTOMATIC HLA TYPING APPARATUS

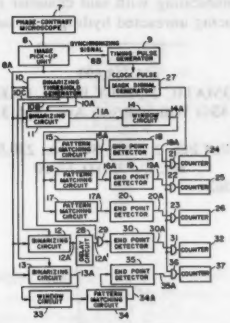
Atsushi Kawahara, Tokyo; Masahiro Sawada, Kawasaki, and Norio Fujii, Urawa, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 13, 1980, Ser. No. 206,610

Claims priority, application Japan, Nov. 19, 1979, 54-148794; Dec. 4, 1979, 54-156319; Dec. 4, 1979, 54-156320; Dec. 4, 1979, 54-156321

Int. Cl.[3] **G01N** *33/80, 33/50*

U.S. Cl. 422—68 **1 Claim**



1. An automatic HLA typing apparatus comprising:

a phase-contrast microscope for forming an optical image of a sample containing lymphocytes;

image pick-up means for transforming said optical image into a binary picture signal to transform the images of lymphocytes into binary picture patterns wherein the binary picture pattern indicative of the image of a positive lymphocyte is a non-annular in shape and relatively large in size whereas the binary picture pattern indicative of the image of a negative lymphocyte is annular or non-annular in shape and relatively small in size;

first detection means for receiving said binary picture signal and detecting from said signal those binary picture patterns which are non-annular and larger than a first determined size;

first counter means for counting the number of binary picture patterns detected by said first detection means;

second detection means for receiving said binary picture signal and detecting from said signal those binary picture patterns which are non-annular and larger than a second determined size that is smaller than said first determined size; and

second counter means for counting the number of binary picture patterns detected by said second detection means.

4,318,887
HEAT EXCHANGE AFTERBURNER AND MUFFLER APPARATUS FOR ENGINE EXHAUST GASES

Hans K. Leistritz, Stegwiesen 8, D 7891 Küssaberg 2, Fed. Rep. of Germany

Filed Oct. 31, 1980, Ser. No. 202,624

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944168; Nov. 22, 1979, 2947058

Int. Cl.[3] **F01N** *3/10*

U.S. Cl. 422—173 **13 Claims**

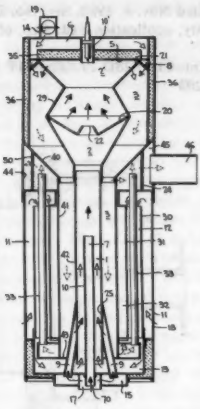
1. Apparatus for the thermal afterburning and muffling of internal combustion engine exhaust gases, comprising:

an elongated counterflow first combustion chamber having a central inlet for receiving exhaust gases;

an exhaust-gas intake chamber surrounding said central inlet, said elongated counterflow combustion chamber including auxiliary injection inlets extending from said exhaust-gas intake chamber into said counterflow combustion chamber, and an air pre-heating chamber for introducing supplemental air into said elongated counterflow combustion chamber around said central inlet such that said supplemental air mixes with the exhaust gases injected through said auxiliary injection inlets;

a second combustion chamber for receiving exhaust gases ejected from said first combustion chamber and including first and second combustion regions, said second combustion region including a transversely extending baffle and an ignition element centrally located therein;

a third combustion chamber including a first combustion compartment surrounding said second combustion chamber and connected to said second combustion region through a partial flow-forming element and having a heat reflective inside surface area, and further including a second combustion compartment surrounding said elongated combustion chamber and receiving combustants from said first combustion compartment;



a ceramic fibrous material at least partially surrounding said second combustion compartment;

an exhaust outlet; and

an elongated axially extending duct interconnecting said exhaust outlet and the outlet of said second combustion compartment.

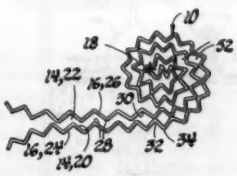
4,318,888
WOUND FOIL STRUCTURE COMPRISING DISTINCT CATALYSTS

Lloyd R. Chapman, St. Clair Shores; Charles W. Vigor, Rochester, and John F. Watton, Mt. Clemens, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 10, 1980, Ser. No. 168,436

Int. Cl.[3] **B01D** *53/36;* **F01N** *3/10*

U.S. Cl. 422—180 **3 Claims**



1. A catalyst-bearing structure for catalytically treating a gas and comprising a catalytically coated metal foil formed so as to define a gas passage comprising a first foil surface and a second

foil surface in facing relationship, said first surface carrying a catalyst and said second surface carrying a catalyst different from the first catalyst for concurrently contacting gases flowing therethrough.

4,318,889

IMPERMEABLE COOLED CLOSING PLUG FOR PROCESSING TUBES, IN PARTICULAR IN SEMICONDUCTOR MANUFACTURE

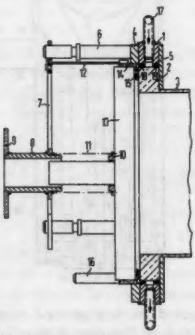
Peter Schiller, Geissach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 6, 1980, Ser. No. 204,540

Claims priority, application Fed. Rep. of Germany, May 28, 1980, 3020264

Int. Cl.³ F28D *21/00*; B01T *19/02*

U.S. Cl. 422—203 **6 Claims**



1. An impermeable cooled closing plug system for semiconductor manufacture processing tubes, comprising: a processing tube with an entrance flange forming a flat abutment surface; a tube closing plug received on said entrance flange and adapted to plug the processing tube in air-tight fashion by use of a sealing ring between the plug and the abutment surface; and said closing plug being made of a material selected from the group consisting of quartz, silicon, and silicon carbide and having low heat conductivity and high chemical stability.

4,318,890

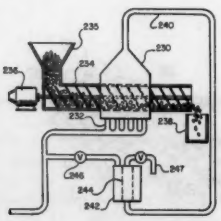
REACTOR FOR GENERATING GRANULAR METAL HYDRIDE

Daniel E. Monahan, 4925 Central Ave., Apt. 13, Charlotte, N.C. 28205

Division of Ser. No. 948,061, Oct. 2, 1978, Pat. No. 4,233,127. This application Aug. 15, 1980, Ser. No. 178,513

Int. Cl.³ B01D *13/00*; B01J *8/08, 19/20*

U.S. Cl. 422—233 **2 Claims**



1. Apparatus for forming a granular metal hydride from elemental hydrogen comprising:

a reactor vessel having means for introducing a granular light metal or alloy at one side thereof and means for removing it from the opposite side, said vessel being provided with means for introducing hydrogen to said reactor at its bottom, and an unreacted hydrogen removal means at its top, means for continuously passing said granular metal through said reactor, means for collecting the granular metal hydride upon exit from said reactor, and means for recovering said unreacted hydrogen communicating with said unreacted hydrogen removal means, said unreacted hydrogen recovery means being a dual compartment chamber, said compartments separated by a hydrogen permeable membrane, and means communicating with said chamber and said reactor for reintroducing unreacted hydrogen to said reactor.

4,318,891

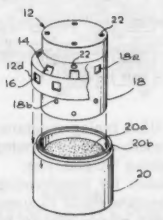
AUTOMATIC TOILET BOWL CLEANER

Seung G. Kim, 4341 Willow Brook Ave., Apt. 310, Los Angeles, Calif. 90029

Filed Feb. 2, 1981, Ser. No. 230,535

Int. Cl.³ B01D *12/00*

U.S. Cl. 422—263 **2 Claims**



1. In an automatic bowl cleaner, placeable in a toilet water tank and containing a water soluble solid disinfectant, flowing into the flushing water of the toilet, comprising:

(a) a container for the disinfecting material;

(b) a closure, mounted over the container, constituted by an aproned disk extending into an outwardly inclining first section, encircled by a first row of apertures, the lower edge of the first section terminates in a second section, encircled by a second row of apertures, being arranged staggered relative to those of the first row of apertures, said second section extending parallely to the apron of the disk;

(c) siphoning means, mounted inside the closure to facilitate the outpouring of the water soluble disinfectant, when dropping to lower levels in the container.

4,318,892

HEAP LEACHING DEVICE

Henry Von Kohorn, 22 Perkins Rd., Greenwich, Conn. 06830

Filed Nov. 10, 1980, Ser. No. 205,877

Int. Cl.³ B01D *11/02*

U.S. Cl. 422—279 **6 Claims**

4. A device for use in the above-ground heap leaching of metal bearing ores with leaching solution, said device comprising a hollow, elongated member having:

A. an annular cross-section,

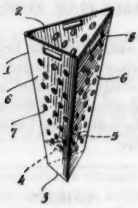
B. a cross-sectional area at its lower end sufficiently large to give said hollow member resting vertically on the leach pad or on a layer of ore sufficient stability unsupportedly to withstand the piling up of ore against it, during construction of the heap, without toppling,

C. inlet means near its upper end for introducing leach liquor under pump or other pressure,

D. a restriction or closure at or near its lower end so that leaching solution fed into said hollow member is accumulated therein,

E. narrow slits in the wall of said hollow member, above said restriction or closure, so that a part of the non-weakened leaching solution fed through said upper inlet is discharged near the lower end of said hollow member and contacts ore near the bottom of the heap, wherein

1. the width of the individual slits is such as to prevent crushed ore pieces of nominal size from passing through said slits and falling into said hollow member, and
2. the cumulative cross-sectional area of said slits
   (i) is such as to accumulate a volume of leaching solution in said hollow member in excess of the volume



discharged from the lower end of said hollow member so as to create pressure therein, and

(ii) progressively increases upwardly from said closure at such a rate that at least a substantial part of the leaching solution fed into said hollow member through said upper inlet is discharged through said slits at different levels of the heap, and

F. means near its upper end for attaching hoisting machinery for pulling out said hollow member in a substantially upward direction so as to create a void in the heap and movement of the ore therein.

4,318,893

PROCESS FOR THE SEPARATION OF AMERICIUM FROM CURIUM CONTAINED IN AN AQUEOUS NITRIC SOLUTION

André Bathellier, Sceaux; Michel Germain, Marcoussis, and Claude Musikas, Villebon, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 10, 1979, Ser. No. 83,318

Claims priority, application France, Oct. 11, 1978, 78 29016

Int. Cl.³ C01G *56/00*

U.S. Cl. 423—10 **9 Claims**

1. A process for the separation of americium from curium contained in an aqueous nitric solution comprising the steps of oxidizing the initial solution at ambient temperature by persulfate and silver ions in the presence of phosphoric acid or phosphate ions at a concentration at the most equal to 0.1 mol per liter to obtain americium (VI), then contacting the thus treated solution with an organic solvent of low reducing power having a high affinity for americium (VI) selected from the group consisting of organophosphorus compounds, amines their mixtures diluted in an inert solvent to extract the americium in the organic phase, then washing the organic phase containing the americium (VI), and finally re-extracting the americium in the organic phase by an aqueous solution.

4,318,894

APPARATUS FOR THE CATALYTIC PURIFICATION OF EXHAUST GASES

Jörg Hensel, Hanau; Edgar Koberstein, Alzenau; Alfred Bozon, Erlensee, and Martin H. Völker, Hanau, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 63,329, Aug. 2, 1979, abandoned, which is a continuation of Ser. No. 596,220, Dec. 12, 1977, abandoned.

This application Dec. 29, 1980, Ser. No. 220,569

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1976, 2658892

Int. Cl.³ B01D *53/36*; F01N *3/28*

U.S. Cl. 423—212 **13 Claims**

1. An apparatus for the catalytic purification of exhaust gases from combustion engines of motor vehicles comprising a customary metal automobile exhaust pipe the dimensions of which do not vary along the length thereof, and which does not contain any special housings or cannisters for catalysts, the interior of said exhaust pipe being at least partially coated with a catalytically active metal oxide or metal, the catalytic material being deposited upon an intermediate layer selected from the group consisting of alumina, zirconium oxide, titanium oxide, magnesium oxide, copper chromium oxide, rare earth metal oxides and mixtures thereof, said exhaust pipe being further provided with a high temperature resistant means in the form of flow interrupting baffle surfaces which are secured to metal ribbons mounted at one or several points inside the pipe, said baffle surfaces reducing the free cross-sectional area of the exhaust pipe to such an extent that the dynamic pressure inside the pipe is increased by 1 to 500 mm of water measured at a flow velocity in air at room temperature of 12 meters per second whereby the temperature for achieving 50% CO conversion is lowered, as compared to a pipe with a smooth wall, said pipe being mounted between the exhaust outlet of the engine and the muffler and representing the sole means to convert the exhaust gases to harmless constituents.

4,318,895

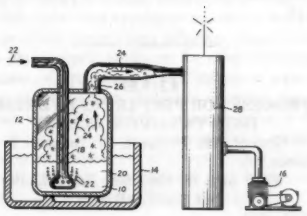
PROCESS FOR GENERATING SINGLET-OXYGEN

Ralph J. Richardson, Ballwin, and Harvey V. Lilenfeld, St. Louis, both of Mo., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Nov. 5, 1979, Ser. No. 90,929

Int. Cl.³ C01B *13/00*

U.S. Cl. 423—579 **9 Claims**



1. A process for generating O_2^* including the steps of:

placing H_2O_2 in a reactor vessel;

maintaining the reactor vessel at a pressure of 1 to 20 Torr and a temperature of −30° to 35° C.;

maintaining the H_2O_2 in the reactor vessel at a pH of 7 to 12 with a nitrogen containing base; and

bubbling chlorine gas through the H_2O_2 in the reactor vessel.

5. A process for generating O_2^* including the steps of:

reacting H_2O_2 with $R_{(x)}NH_{(y)}$ as follows

$$H_2O_2 + R_{(x)}NH_{(y)} \rightarrow HO_2^- + R_{(x)}NH_{(y+1)}^+$$

where $R_{(x)}NH_{(y)}$ is at least one amine; and reacting Cl_2 with the HO_2^- to form O_2^*.

4,318,896

MANUFACTURE OF ALUMINA PARTICLES

Michael W. Schoonover, Roselle, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 140,378, Apr. 14, 1980, abandoned. This application Apr. 20, 1981, Ser. No. 255,917

Int. Cl.[3] C01F *7/02;* B01J *21/04*

U.S. Cl. 423—628 16 Claims

1. A method of preparing alumina hydrogel particles which comprises:

(a) preparing an admixture of an acidic alumina hydrosol and an ammonia precursor at below gelation temperature, said ammonia precursor consisting essentially of a weakly basic material substantially stable at ambient temperature but convertible to ammonia at elevated temperatures;

(b) dispersing said mixture as droplets in a water-immiscible bath at a temperature and for a time to effect at least partial gelation of said hydrosol to form alumina hydrogel particles having an internal aqueous phase possessing a salt concentration;

(c) contacting said alumina hydrogel particles with an aqueous acidic solution having a pH of no greater than 7 and having a compound in said solution in a concentration substantially different from said salt concentration of said internal aqueous phase of said alumina hydrogel particles, wherein the concentration of said compound of said solution provides an osmotic pressure to prevent substantial osmotic migration of hydrogen and hydroxyl ions of said solution into said alumina hydrogel particles to thereby prevent substantial swelling and disintegration of said alumina hydrogel particles;

(d) aging said alumina hydrogel particles of step (c) in said aqueous acidic solution for a period of greater than about one-half hour without gradual reduction of the concentration of said compound in said aqueous acid solution;

(e) contacting said aged alumina hydrogel particles with an aqueous alkaline solution having a pH of greater than 7;

(f) aging said alumina hydrogel particles to firmness in said aqueous alkaline solution for a period of time of up to about 6 hours, and thereafter recovering firm alumina hydrogel particles; and,

(g) drying said firm alumina hydrogel particles recovered in step (f).

4,318,897

PROCESS FOR PREPARING HYDRIDED IRON-VANADIUM ALLOYS

Stephen T. Gonczy, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 18, 1980, Ser. No. 179,139

Int. Cl.[3] C01B *6/24*

U.S. Cl. 423—644 3 Claims

1. A method for forming a hydrided vanadium-iron alloy substantially corresponding to the formula $V_{(1-x)}Fe_xH_z$ where x ranges from about 0.05 to about 0.28, where H represents the hydrogen recoverable from said alloy at a temeprature less than about 200° C. at a pressure of at least 1 atmosphere, and z has a value up to about 1 for the controlled storage of hydrogen which comprises activating by heating in a vacuum at a temperature from about 400° C. to about 650° C. an alloy substantially of the formula $V_{(1-x)}Fe_x$ where x is as above defined and thereafter contacting said activated alloy with hydrogen at a pressure of at least 1 atmosphere and less than 50 atmospheres.

4,318,898

TECHNETIUM-99m-LABELLED (2,4,5-TRIMETHYLACETANILIDO)-IMINODIACETATE FOR LIVER FUNCTION DIAGNOSIS, CHLOROACETRIC ACID (2,4,5-TRIMETHYLANILIDE), (2,4,5-TRIMETHYLACETANILIDO)-IMINODIACETATE, AND PROCESS FOR THEIR PREPARATION

Michael Molter, Frankfurt am Main; Gerhard Kloss, Kelkheim, and Eberhard Schickel, Selters, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 19, 1979, Ser. No. 105,108

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855334

Int. Cl.[3] A61K *49/00, 43/00;* G01T *1/00*

U.S. Cl. 424—1 15 Claims

15. A method for visualizing the hepatobiliary system of a patient which comprises intravenously administering to said patient a scintigraphically-detectable amount of (2,4,5-trimethylacetanilido)-iminodiacetate, labelled with Technetium-99m, and detecting the same in the hepatobiliary system of said patient by scintigraphy.

4,318,899

ENCAINIDE ASSAY METHOD

Robert F. Mayol, Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

Continuation of Ser. No. 971,180, Dec. 20, 1978, abandoned. This application Jun. 2, 1980, Ser. No. 155,338

Int. Cl.[3] G01N *33/56, 33/58;* C07G *7/00;* C07D *211/32*

U.S. Cl. 424—1 9 Claims

1. A method for the assay of encainide in a test sample which comprises:

(a) preparing a mixture of said sample with a measured amount of labeled tracer which is immunologically homologous with encainide,

(b) reacting therewith antiserum containing an antibody having the property of competitively binding as antigen encainide and said tracer to form an antigen antibody complex wherein such amounts of said antiserum and said tracer are employed that only a portion of said tracer is combined as said antigen antibody complex,

(c) thereafter separating said mixture into an antigen antibody complex-containing portion and a supernatent liquid-containing portion,

(d) measuring the amount of tracer in at least one of said complex-containing portion and said supernatant liquid-containing portion, and

(e) determining the amount of encainide in said sample by comparing said measurement to a group of standard reference measurements made on standard reference samples containing known and differing amounts of encainide and treated identically according to steps (a), (b), (c), and (d) as said test sample.

4,318,900

ALICYCLIC AMIDES HAVING A PHYSIOLOGICAL COOLING EFFECT

David G. Rowsell, Staines; David J. Spring, Slough, and Roger Hems, Maidenhead, all of England, assignors to Wilkinson Sword Limited, London, England

Division of Ser. No. 530,721, Dec. 9, 1974, Pat. No. 4,248,859. This application Aug. 11, 1980, Ser. No. 177,359

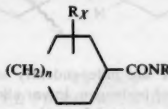
Claims priority, application United Kingdom, Dec. 12, 1973, 57528/73

Int. Cl.[3] A61K *7/22*

U.S. Cl. 424—54 15 Claims

1. In a consumer product for application to or consumption by the human body comprising a consumer product base and, as adjuvants in said base, (i) at least one of the following: a flavourant, colourant, perfuming agent, surface active agent or antiseptic agent, and (ii) an ingredient capable of stimulating

the cold receptors of the nervous system of the surface tissues of the body in those parts of the human body with which the product comes in contact during use, the improvement which comprises using as the cold receptor stimulating ingredient an effective amount of a cold receptor stimulating alicyclic amide of the formula:



where

n is 0 or an integer of from 2–6 inclusive;

x has a value of 1, 2 or 3;

R is C_1–C_5 alkyl, at least one R group being in a 1, 2 or 3 position relative to the CONR'R" group and the total number of carbon atoms provided by the R groups and the carbocycle to which they are attached being from 8–14; and

R' and R" together represent a straight or branched chain alkylene group of up to 8 carbon atoms, the opposite ends of which group are joined to the nitrogen atom to form a 5- or 6-membered heterocycle, or a $—CH_2CH_2OCH_2CH_2—$group.

4,318,901

HAIR COSMETIC COMPOSITION

Atsuo Ishida, Chiba; Itomi Homma, Funabashi, and Shigeo Inoue, Ichikai, all of Japan, assignors to KAO Soap Co., Ltd., Tokyo, Japan

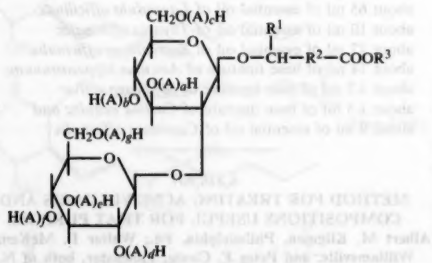
Filed Sep. 13, 1979, Ser. No. 75,124

Claims priority, application Japan, Sep. 29, 1978, 53-120275

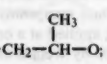
Int. Cl.³ A61K *7/06, 7/08, 7/09, 7/11*

U.S. Cl. 424—70 **3 Claims**

1. In a hair cosmetic composition selected from the group consisting of shampoo, rinse, hair tonic, pomade, setting lotions, hair spray, hair oil, cold wave and hair dye, the improvement which consists essentially in adding to such composition as a moisturizer about 0.1% by weight to about 50% by weight of a hydroxy-propyl-etherified glycolipid ester of the formula:



wherein R^1 represents methyl or hydrogen; R^2 represents a saturated or unsaturated hydrocarbon group having 11 to 15 carbon atoms when R^1 is methyl, or a saturated or unsaturated hydrocarbon group having 12 to 16 carbon atoms when R^1 is hydrogen; A represents the group



R^3 represents a saturated or unsaturated hydrocarbon group having 1 to 20 carbon atoms or $—(A)_hH$; and a, b, c, d, e, f, g and h are each integers and are in the range of 1 to 60 as their total number.

4,318,902

CONCENTRATED IMMUNOGLOBULIN SOLUTION SUITED FOR INTRAVENOUS ADMINISTRATION

Wolfgang Stephan, Dreieich, Fed. Rep. of Germany, assignor to Biotest-Serum-Institut GmbH, Frankfurt, Fed. Rep. of Germany

Filed Jan. 7, 1980, Ser. No. 110,038

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1979, 2901882

Int. Cl.³ A61K *39/395*

U.S. Cl. 424—85 **10 Claims**

1. A process for the preparation of an immunoglobulin solution containing IgM in concentrated form and suited for intravenous administration, comprising treating an IgM-containing protein fraction obtained by conventional fractionation from blood plasma or serum with β-propiolactone in an amount such that the ratio of β-propiolactone to a 5% solution of the IgM-containing proteins is from about 0.05 to 0.15 ml per 100 ml.

7. An intravenously injectable IgM-containing solution produced by the process of claim 1, having a maximum complement consumption per ml at a 30-fold dilution of 0.3, exhibiting at least about 70% of the antibody activity of the initial protein fraction against E. coli, Klebsiella, Pyocyaneus, *Streptococcus viridans, Streptococcus haemolyticus,* Enterococci and Staphylococci and having an IgM content of about 10% based on total globulins.

9. In the intravenous administration of IgM, the improvement which comprises employing an IgM-containing solution according to claim 7.

4,318,903

LIVE INFLUENZA VIRUS VACCINE AND THE PREPARATION THEREOF

Michele Löbmann, Cerous-Mousty, and Gerard Florent, Genval, both of Belgium, assignors to Smithkline-Rit, Belgium

Filed Jul. 12, 1978, Ser. No. 923,846

Int. Cl.³ A61K *39/12;* **C12N** *7/00, 7/04*

U.S. Cl. 424—89 **4 Claims**

1. The recombinant influenza virus CNCM I-062 strain.

2. A live influenza virus vaccine composition comprising an effective dose of the recombinant influenza virus CNCM I-062 strain and a pharmaceutical diluent for nasal administration.

4. A process of producing a live influenza virus vaccine according to claim 2 which comprises allowing the recombinant influenza virus CNCM I-062 strain to grow in the allantoic cavity of embryonated chicken eggs for a period of time sufficient to permit production of a large amount of said virus, harvesting the resulting virus material and, if desired, adding thereto a stabilizer and freeze-drying the mixture.

4,318,904

PEPTIDE AFFINITY LABELS FOR THROMBIN AND OTHER TRYPSIN-LIKE PROTEASES

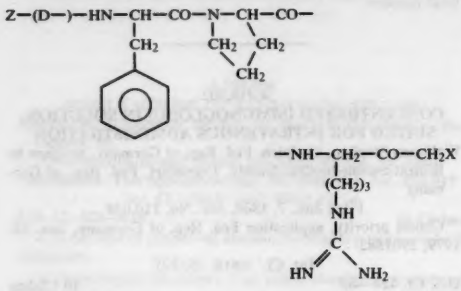
Elliott N. Shaw, Shoreham, and Charles A. Kettner, Yaphank, both of N.Y., assignors to Research Corporation, New York, N.Y.

Filed Apr. 25, 1980, Ser. No. 143,897

Int. Cl.³ A61K *37/00;* **C07D** *237/00, 00/00;* **C07C** *103/52*

U.S. Cl. 424—177 **12 Claims**

1. A peptide affinity label of the formula:



or a hydrohalic acid addition product thereof; wherein X is a halogen atom, and Z is hydrogen or C_1–C_6 acyl.

4,318,905

NONAPEPTIDE AND DECAPEPTIDE AGONISTS OF LUTEINIZING HORMONE RELEASING HORMONE CONTAINING HETEROCYCLIC AMINO ACID RESIDUES

John J. Nestor, San Jose; Gordon H. Jones, and Brian H. Vickery, both of Cupertino, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jun. 23, 1980, Ser. No. 162,455
Int. Cl.³ A61K *37/00;* **C07C** *103/52*
U.S. Cl. 424—177 **22 Claims**

1. A compound of the formula

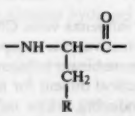
(pyro)Glu—His—V—Ser—W—X—Y—Arg—Pro—Z (I)

and the pharmaceutically acceptable salts thereof wherein:

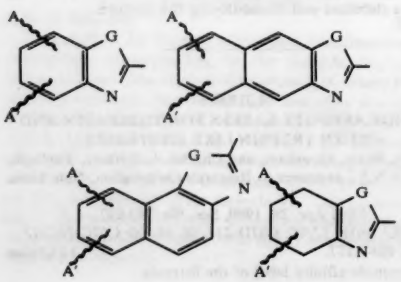
V is tryptophyl, phenylalanyl or 3-(1-naphthyl)-L-alanyl;

W is tyrosyl, phenylalanyl or 3-(1-pentafluorophenyl)-L-alanyl;

X is a D-amino acid residue of the formula:



wherein R is a heterocyclic aryl radical selected from the group consisting of radicals represented by the following structural formulas:



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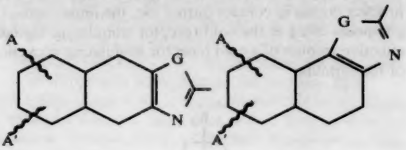
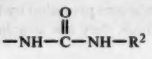


wherein A and A' are independently selected from the group consisting of hydrogen, lower alkyl, chlorine, and bromine, and G is selected from the group consisting of oxygen, nitrogen, and sulfur;

Y is leucyl, isoleucyl, nor-leucyl or N-methyl-leucyl;

Z is glycinamide or —NH—R^1, wherein

R^1 is lower alkyl, cycloalkyl, fluoro lower alkyl or



wherein:

R^2 is hydrogen or lower alkyl.

4,318,906

MEDICINAL COMPOSITION FOR EXTERNAL USE FOR TREATING WOUNDS

Jean-Paul Llopart, Alenya, France, assignor to Establissement Rinrone, Mauren, Liechtenstein

Filed Jun. 23, 1980, Ser. No. 162,313
Claims priority, application France, Jun. 25, 1979, 79 17258
Int. Cl.³ A61K *35/78*
U.S. Cl. 424—195 **9 Claims**

1. Liquid medicinal composition for external use for treating wounds comprising from 450 to 1,000 ml of base tincture of *Centella asiatica*, from 11 to 65 ml of natural essential oil of *Lavandula officinalis*, from 5 to 10 ml of natural essential oil of *Thymus officinalis*, from 5 to 20 ml of natural essential oil of *Rosmarinus officinalis* and from 4 to 14 ml of base tincture of *Aesculus hippocastunum.*

9. Liquid medicinal composition diluted in ethanol for external use for treating wounds comprising:

about 986 ml of base tincture of *Centella asiatica;*
about 65 ml of essential oil of *Lavandula officilinas;*
about 10 ml of essential oil of *Thymus officinalis;*
about 17 ml of essential oil of *Rosmarinus officinalis;*
about 14 ml of base tincture of *Aesculus hippocastunum;*
about 1.7 ml of base tincture of *Medicago sativa;*
about 1.5 ml of base tincture of *Carlina acaulis; and*
about 9 ml of essential oil of *Cupressus officinalis.*

4,318,907

METHOD FOR TREATING ACNE VULGARIS AND COMPOSITIONS USEFUL FOR THAT PURPOSE

Albert M. Kligman, Philadelphia, Pa.; Walter L. McKenzie, Williamsville, and Peter F. Ciesla, Lancaster, both of N.Y., assignors to Westwood Pharmaceuticals, Inc., Buffalo, N.Y.

Filed Apr. 4, 1978, Ser. No. 893,239
Int. Cl.³ A61K *31/075, 31/60*
U.S. Cl. 424—230 **13 Claims**

1. A method for treating acne vulgaris comprising applying to the skin of a subject having this condition a therapeutically effective of salicylic acid and benzoyl peroxide for a period of time sufficient to alleviate symptoms of said acne condition, said salicylic acid being applied at a concentration in the range of from about 3% to 7% by weight and said benzoyl peroxide being applied at a concentration of about 3% to 20% by weight; said percentages being expressed on a weight basis based on the total weight of compositions containing said

benzoyl peroxide or salicylic acid or the combination of benzoyl peroxide and salicylic acid.

4,318,908

METHYLATED PROSTAGLANDIN DERIVATIVES

Satoru Enomoto, Fujisawa; Kiro Asano; Humio Tamura, both of Kukizaki, and Hiromitsu Tanaka, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 27, 1980, Ser. No. 153,415

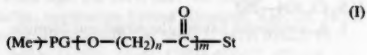
Claims priority, application Japan, Dec. 6, 1979, 54-158354; Mar. 19, 1980, 60-35086

The portion of the term of this patent subsequent to Apr. 15, 1997, has been disclaimed.

Int. Cl.³ C07J *51/00*; A61K *31/56*

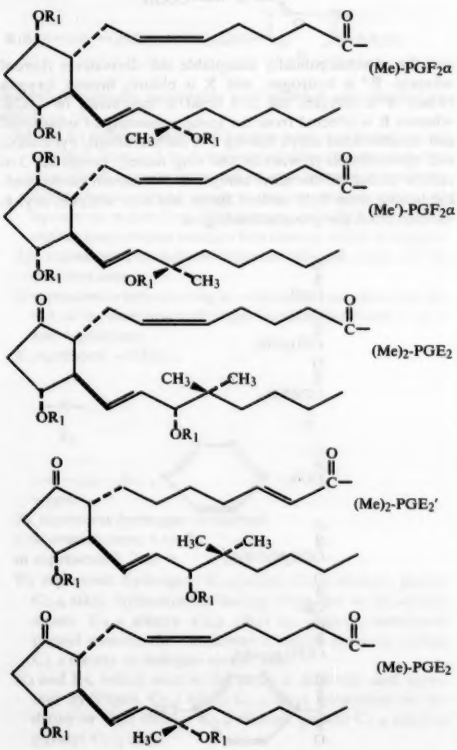
U.S. Cl. 424—243 **6 Claims**

1. Methylated prostaglandin derivatives having the formula (I)



(I)

wherein (Me)—PG represents methylated PGE_1, PGE_2, PGE_3, $PGF_1\alpha$, $PGF_2\alpha$, $PGF_3\alpha$ or PGE_2' preferably methylated $PGF_2\alpha$, PGE_2 or PGE_2'.



(Me)-$PGF_2\alpha$

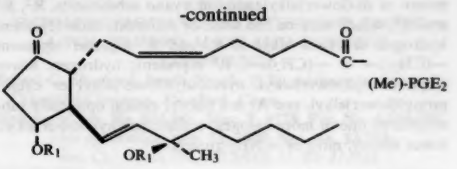
(Me')-$PGF_2\alpha$

$(Me)_2$-PGE_2

$(Me)_2$-PGE_2'

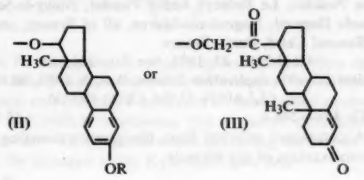
(Me)-PGE_2

-continued

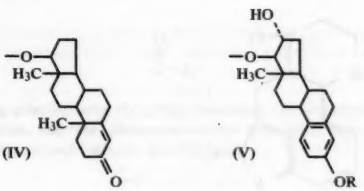


(Me')-PGE_2

wherein R_1 represents hydrogen atom, acetyl, propionyl, butyryl, or benzoyl group preferably hydrogen atom or acetyl group. In the formula (I), St is selected from the group consisting of the groups having the formula (II) to (IX).



(II) or (III)



(IV) (V)

wherein R represents hydrogen atom, acetyl, propionyl, cyclopentylpropionyl, phenylpropionyl, cyclopentanepropionyl, butyryl or benzoyl group preferably hydrogen atom or benzoyl group; n is 1, 2 or 3 and m is 0 or 1.

4. An abortifacient which comprises prostaglandin derivative according to claim **1** in combination with an inert pharmacologically acceptable carrier.

4,318,909

BENZOXAZOCINES

Alan C. White, Windsor, and Robin G. Shepherd, Burnham, both of England, assignors to John Wyeth & Brother Limited, Maidenhead, England

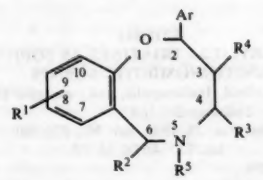
Filed Dec. 8, 1980, Ser. No. 214,078

Claims priority, application United Kingdom, Jan. 17, 1980, 01669/80

Int. Cl.³ C07C *267/22*; A61K *31/33*

U.S. Cl. 424—244 **9 Claims**

9. A method of treating depression in a mammal which comprise administering to said mammal a therapeutically effective amount of a compound selected from the group consisting of a benzoxazocine of formula (I)



(I)

and a pharmaceutically acceptable acid addition salt thereof, wherein R^1 represents a hydrogen, or one or more halogen, trifluoromethyl, lower alkyl, lower alkoxy, nitro, —NH_2,

mono- or di-(lower)alkylamino or cyano substituents, R^2, R^3 and R^4, which may be the same or different, each represent hydrogen or lower alkyl or R^3 and R^4 together represent $-(CH_2)_3-$ or $-(CH_2)_4-$, R^5 represents hydrogen, lower alkyl, phenyl(lower)alkyl, cyclobutyl(lower)alkyl or cyclopropyl(lower)alkyl, and Ar is a phenyl radical optionally substituted by one or more halogen, trifluoromethyl, lower alkyl, lower alkoxy, nitro or $-NH_2$ groups.

4,318,910

INDOLOBENZOXAZINES

Lucien Nedelec, Le Raincy; André Pierdet, Noisy-le-Sec, and Claude Dumont, Nogent-sur-Marne, all of France, assignors to Roussel Uclaf, Paris, France

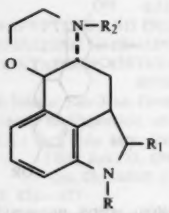
Filed Mar. 23, 1981, Ser. No. 246,169

Claims priority, application France, Apr. 3, 1980, 80 07544

Int. Cl.³ A01N *43/84;* C07D *498/06*

U.S. Cl. 424—248.4 **15 Claims**

1. A compound selected from the group consisting of indolobenzoxazines of the formula



wherein R is selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms and optionally substituted aralkyl of 7 to 12 carbon atoms, R_1 is selected from the group consisting of hydrogen, chlorine and bromine, R_2' is selected from the group consisting of hydrogen, optionally substituted alkyl of 1 to 5 carbon atoms, cycloalkylalkyl of 4 to 7 carbon atoms, alkenyl and alkynyl of 3 to 7 carbon atoms and optionally substituted aralkyl of 7 to 12 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts.

6. A hypotensive and dopaminergic agonist compositions comprising a hypotensively and dopaminergically effective amount of at least one compound of claim 1 and an inert pharmaceutical carrier.

11. A method of inducing hypotensive and dopaminergic agonist activity in warm-blooded animals comprising administering to warm-blooded animals an amount of at least one compound of claim 1 sufficient to cause hypotensive and dopaminergic agonist activity.

4,318,911

5,6-DIARYL-1,2,4-TRIAZINES AS TOPICAL ANTITHROMBOTIC AGENTS

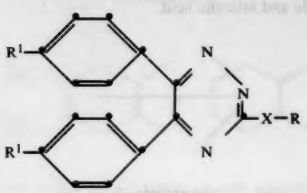
William B. Lacefield, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 29, 1980, Ser. No. 220,350

Int. Cl.³ A61K *31/53*

U.S. Cl. 424—249 **6 Claims**

1. A method of achieving an anti-thrombotic effect in mammals which comprises administering topically to a mammal in need of such treatment, an anti-thrombotically-effective amount of a triazine of the formula



II

wherein R is C_1–C_4 alkyl, X is S, O or a direct bond and each R^1 individually is (C_1–C_3)alkyl-O-.

4,318,912

6-(1-HYDROXYETHYL)-3-SUBSTITUTED-1-AZABICYCLO(3.2.0)-HEPT-2-EN-7-ONE-2-CARBOXYLIC ACID

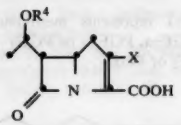
Burton G. Christensen, Scotch Plains, and Ronald W. Ratcliffe, Matawan, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 470, Jan. 2, 1979, abandoned, which is a continuation of Ser. No. 843,620, Oct. 19, 1977, abandoned. This application Jun. 18, 1980, Ser. No. 160,717

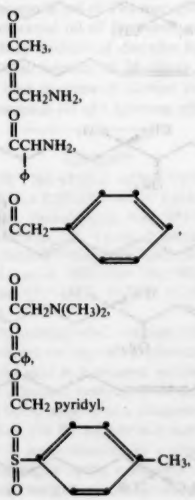
Int. Cl.³ C07D *487/04;* A61K *31/40;* C07D *213/55*

U.S. Cl. 424—263 **4 Claims**

1. A compound having the structural formula:



and the pharmaceutically acceptable salt derivatives thereof wherein: R^4 is hydrogen; and X is chloro, bromo, oxygen (when X is oxygen, the 2–3 bond is saturated), or —OR wherein R is selected from the group consisting of substituted and unsubstituted alkyl, having 1–6 carbon atoms, cycloalkyl and cycloalkylalkyl wherein the ring moiety comprises 3–6 carbon atoms and the alkyl comprises 1–4 carbon atoms, aralkyl having from 7–16 carbon atoms and acyl wherein acyl is selected from the group consisting of



-continued

wherein the substituent or substituents on the radical R are selected from: amino or monoalkylamino wherein the alkyl has 1–6 carbon atoms.

4. An antibiotic pharmaceutical composition comprising a therapeutically effective amount of a compound according to claim 1 and a inert pharmaceutical carrier therefor.

4,318,913
1,2,4-TRIAZOLE-3,5-DIAMINE DERIVATIVES

John W. Clitherow; John Bradshaw, both of Ware; John W. M. Mackinnon, Royston; Barry J. Price, Hertford; Michael Martin-Smith, Near Ware, and Duncan B. Judd, Ware, all of England, assignors to Glaxo Group Limited, London, England

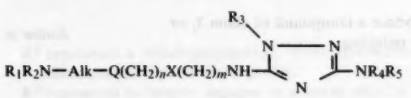
Filed Apr. 26, 1979, Ser. No. 33,508

Claims priority, application United Kingdom, Apr. 26, 1978, 16468/78; Dec. 8, 1978, 47689/78; Mar. 2, 1979, 07422/79

Int. Cl.[3] **A61K** *31/445, 31/41;* **C07D** *403/12, 403/14*

U.S. Cl. 424—267 **24 Claims**

1. A compound of the formula (I)



(I)

and physiologically acceptable acid addition salts thereof, in which

R_1 and R_2 together with the nitrogen atom to which they are attached form a 5 to 8 membered alicyclic heterocyclic ring which may be saturated or may contain at least one double bond, may be unsubstituted or may be substituted by one or more C_{1-3} alkyl groups or a hydroxy group and/or may contain another heteroatom which is oxygen;

Alk represents a straight or branched alkylene chain of 1 to 6 carbon atoms;

Q represents a benzene ring in which incorporation into the rest of the molecule is through bonds at the 1- and 3- or 1- and 4-positions;

X represents $—CH_2—$,

—O— or —S—

where

R_6 represents hydrogen or methyl;

n represents zero, 1 or 2;

m represents 2, 3 or 4;

R_3 represents hydrogen, C_{1-6} alkyl, C_{3-6} alkenyl, phenyl C_{1-6} alkyl, hydroxyalkyl having from two to six carbon atoms, C_{1-6} alkoxy C_{1-6} alkyl or phenyl, substituted phenyl wherein the substituent is one or more C_{1-3} alkyl, C_{1-3} alkoxy or halogen atoms; and

R_4 and R_5, which may be the same or different each represent hydrogen, C_{1-6} alkyl, C_{1-6} alkyl substituted by hydroxy or C_{1-3} alkoxy, C_{3-6} alkenyl, phenyl C_{1-6} alkyl or pyridyl C_{1-6} alkyl.

4,318,914
HYPOLIPIDEMIC AND ANTIATHEROSCLEROTIC 4-(POLYFLUORO-ALKYLAMINO)PHENYL COMPOUNDS

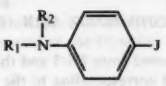
Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 884,941, Mar. 9, 1978, Pat. No. 4,205,085. This application Nov. 13, 1979, Ser. No. 93,768

Int. Cl.[3] **C07D** *295/18;* **A61K** *31/40, 31/445*

U.S. Cl. 424—267 **16 Claims**

1. A compound of the formula



I

wherein R_1 is a saturated or unsaturated hydrocarbon radical of 7–19 carbon atoms which may be branched or unbranched and which may contain a saturated or unsaturated cycloalkyl group, said radical containing one or more perfluorinated ($—CF_2—$ or $—CF_3$) carbon atoms excluding the carbon adjacent to the nitrogen atom; R_2 is hydrogen; and

(a) J is

Z being selected from the group consisting of, pyrrolidino or piperidino; and the pharmaceutically acceptable non-toxic acid-addition and cationic salts thereof.

4,318,915
SUBSTITUTED GUANDINES AND METHODS OF PREPARATION THEREOF

Erich Cohnen; Ben Armah, and Eva Hofferber, all of Hamburg, Fed. Rep. of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

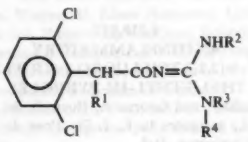
Filed Jul. 14, 1980, Ser. No. 167,992

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931735

Int. Cl.[3] **A01K** *31/165, 31/415;* **C07C** *129/12;* **C07D** *233/48*

U.S. Cl. 424—273 R **11 Claims**

1. A compound of the formula



wherein R^1 is chlorine, bromine, or methoxy; and R^2, R^3, and R^4 are individually hydrogen or methyl, at least one of R^2, R^3, and R^4 being hydrogen; or R^2 and R^3 together are an ethylene group and R^4 is hydrogen, and pharmaceutically acceptable acid addition salts thereof.

6. 1-Methyl-2-methyl-3-[2-(2,6-dichlorophenyl)-2-bromo-acetyl]guanidine.

8. A pharmaceutical composition for the treatment of hypertension comprising a pharmaceutically acceptable carrier and an amount of a compound of claim 1 or claim 6 sufficient to provide an effective amount of said compound in a warm blooded animal.

10. A method of treating hypertension comprising administering an effective amount of a compound of claim 1 or claim 6 to a warm blooded animal.

4,318,916
ANTIBIOTIC PS-5 AND DERIVATIVES HAVING β-LACTAMASE INHIBITORY ACTIVITY AND PRODUCTION THEREOF

Kazuhiko Okamura, Yamato; Shoji Hirata, Fujisawa; Yasushi Okumura; Yasuo Fukagawa, both of Kamakura; Yasutaka Shimauchi, Ninomiya; Tomoyuki Ishikura, Chigasaki; Kageaki Kouno, Ikegami oto, all of Japan, and Joseph Lein, Fayetteville, N.Y., assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1978, Ser. No. 882,730

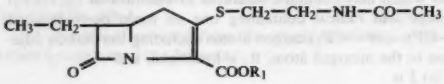
Claims priority, application Japan, Mar. 31, 1977, 52-35375; Aug. 9, 1977, 52-94651

Int. Cl.³ C07D *487/09;* A61K *31/40*

U.S. Cl. 424—274 **15 Claims**

1. A compound selected from PS-5 and the salts and esters thereof, the compound corresponding to the formula

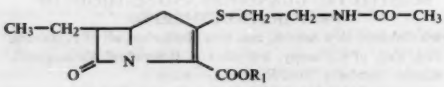
(A)



wherein R_1 represents hydrogen, lower alkyl and triphenylmethyl, and including the salts of the compound wherein R_1 is hydrogen.

12. A method for combatting or preventing a bacterial infection in mammals which comprises administering to the mammal an antibiotically effective amount of a compound selected from PS-5 and the pharmaceutically-acceptable salts and esters thereof, the compound corresponding to the formula

(A)



wherein R_1 represents hydrogen, lower alkyl and triphenylmethyl, and including the pharmaceutically-acceptable salts of the compound wherein R_1 is hydrogen.

4,318,917
ANTIINFLAMMATORY 2,3-DIARYL-5-[2,2,2-TRIFLUORO-1-(TRIFLUOROMETHYL]ETHYL-1H-PYRROLES

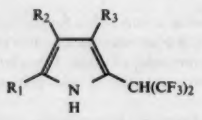
Saul C. Cherkofsky, and George A. Boswell, Jr., both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 226,871, Jan. 21, 1981, which is a continuation-in-part of Ser. No. 170,872, Jul. 21, 1980, abandoned. This application May 14, 1981, Ser. No. 261,197

Int. Cl.³ A61K *31/40, 31/44;* C07D *207/323, 401/04*

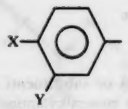
U.S. Cl. 424—274 **35 Claims**

1. A compound of the formula



where

R_1 and R_2 independently = 3-pyridyl or



where

X = H, F, Cl, Br, C_1–C_2 alkyl, C_1–C_2 alkoxy, di(C_1–C_2-alkyl-)amino or $CH_3S(O)_n$ where n = 0, 1 or 2;

Y = H, F or Cl; provided when Y = F or Cl, X must = F or Cl;

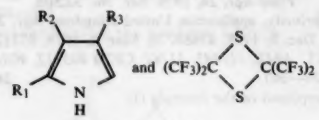
R_3 = H or C_1–C_3 alkyl;

or its pharmaceutically suitable acid addition salt where at least one of R_1 or R_2 = 3-pyridyl or X = di(C_1–C_2 alkyl)amino.

10. A pharmaceutical composition consisting essentially of a suitable pharmaceutical carrier and an effective antiinflammatory amount of a compound of claim **1**.

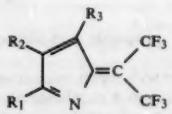
28. A method of forming a compound of claim **1** which comprises:

(A) contacting



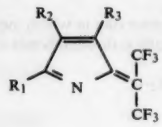
to produce a compound of claim **1**; or

(B) reducing



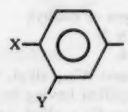
to produce a compound of claim **1**.

29. A compound of the formula



where

R_1 and R_2 independently = 3-pyridyl or



where

X = H, F, Cl, Br, C_1–C_2 alkyl, C_1–C_2 alkoxy, di(C_1–C_2-alkyl-)amino or $CH_3S(O)_n$ where n = 0, 1 or 2;

Y = H, F or Cl; provided when Y = F or Cl, X must = F or Cl;

R_3 = H or C_1–C_3 alkyl.

4,318,918

NOVEL SALT OF 5-(BENZOYL)-THIOPHENE-2-α-METHYL-ACETIC ACID

Andre Queuille, Noisy-le-Sec, and Gilbert Rouiller, Courbevoie, both of France, assignors to Roussel Uclaf, Paris, France

Filed Jul. 14, 1976, Ser. No. 705,057
Claims priority, application France, Jul. 28, 1975, 75 23501
Int. Cl.³ A61K 31/38; C07D 333/24
U.S. Cl. 424—275 4 Claims

1. Tromethamine 5-(benzoyl)-thiophene-2-α-methyl acetate.

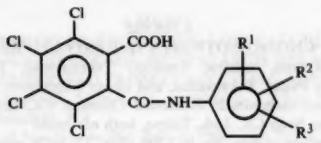
4,318,919

COMBATING BACTERIA WITH TETRACHLOROPHTHALAMIC ACIDS

Engelbert Kühle, Bergisch-Gladbach; Peter Kraus, Cologne, and Albrecht Marhold, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 18, 1980, Ser. No. 170,191
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932689
Int. Cl.³ C07C 103/84; A01N 37/22
U.S. Cl. 424—278 9 Claims

1. A tetrachlorophthalamic acid of the formula



in which

R^1 represents a trihalogenomethyl, trihalogenomethoxy or trihalogenomethylmercapto group,

R^2 represents hydrogen, halogen or a lower alkyl or lower alkoxy group, or

R^1 together with R^2, in the o-position relative to each other, denote —O—CF_2—O—CF_2—, —O—CF_2—O— or —O—CF_2—CFX—O—,

X represents hydrogen, chlorine or fluorine, and

R^3 represents hydrogen, halogen or a lower alkyl, lower alkoxy, lower alkylmercapto or phenoxy group, the phenoxy being optionally substituted by a halogen, methyl or methoxy group.

7. A bactericidal composition comprising a bactericidally effective amount of a compound according to claim 1 in admixture with a diluent.

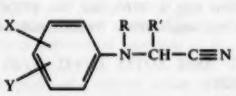
4,318,920

OVICIDES

Robert G. Stein, Kenosha, Wis., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 8, 1979, Ser. No. 10,291
Int. Cl.³ A01N 37/34
U.S. Cl. 424—304 8 Claims

1. A method of combating the hatching of eggs of crop-damaging insects consisting essentially in applying to the habitat of said eggs an ovicidal amount of a compound of the formula



wherein X and Y, independently, stand for hydrogen, halogen, loweralkyl, loweralkyloxy, nitro or CF_3; R is hydrogen or methyl; and R′ is hydrogen or loweralkyl and simple acid addition salts thereof, together with an agriculturally acceptable carrier.

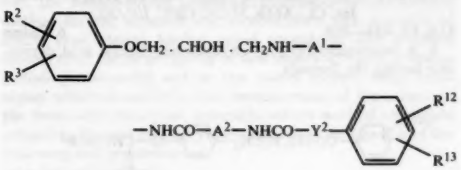
4,318,921

ALKANOLAMINE DERIVATIVES

Leslie H. Smith, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 839,568, Oct. 5, 1977, Pat. No. 4,211,878.
This application Nov. 30, 1979, Ser. No. 98,933
Claims priority, application United Kingdom, Oct. 7, 1976, 41714/76
Int. Cl.³ C07C 121/60, 103/22; A61K 31/275, 31/165
U.S. Cl. 424—304 10 Claims

1. An alkanolamine derivative selected from the group consisting of a compound of the formula:



wherein A^1 is alkylene of from 2 to 6 carbon atoms; wherein A^2 is a direct link or alkylene of up to 6 carbon atoms; wherein R^2, R^3, R^{12} and R^{13}, which may be the same or different, each is hydrogen, halogen, hydroxy, amino, nitro, carbamoyl, cyano or alkyl, alkenyl, alkoxy, alkylthio, alkenyloxy, alkanoyl or alkanoyl-amino each of up to 6 carbon atoms, or wherein R^2 and R^3 together and/or R^{12} and R^{13} together, form trimethylene, tetramethylene or buta-1,3-dienylene such that together with the adjacent benzene ring they form respectively indanyl, 5,6,7,8-tetrahydronaphthyl or naphthyl; and wherein Y^2 is a direct link, or alkylene or alkyleneoxy each of up to 6 carbon atoms; and the non-toxic pharmaceutically-acceptable acid-addition salts thereof.

9. A method for the treatment or prophylaxis of heart diseases and hypertension in a warm-blooded animal which comprises administering to said animal an effective amount of at least one compound claimed in claim 1.

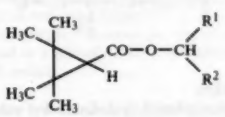
4,318,922

COMBATING PESTS WITH FLUORINE-SUBSTITUTED 2,2,3,3-TETRAMETHYLCYCLOPROPANE-1-CARBOXYLIC ACID BENZYL ESTERS

Rainer Fuchs, Wuppertal; Klaus Naumann, Leverkusen; Hans-Jochem Riebel, Wuppertal; Wolfgang Behrenz, Overath; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 198,039
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 2945038
Int. Cl.³ A01N 53/00; C07C 69/74, 121/75
U.S. Cl. 424—304 10 Claims

1. A 2,2,3,3-tetramethylcyclopropane-1-carboxylic acid fluorine-substituted-benzyl ester of the formula



in which

R^1 is hydrogen, cyano, or alkyl, alkenyl or alkynyl each with up to 4 carbon atoms, and

R^2 is a phenyl radical which is substituted by halogen and/or by optionally halogen-substituted phenoxy, with the proviso that the radical R^2 in total contains at least one fluorine substituent.

9. A method of combating insects or acarids comprising applying to the insects or acarids or to a habitat thereof, an insecticidally or acaricidally effective amount of a compound according to claim **1**.

4,318,923

BENZAMINOETHYLPHENOXYCYCLOHEXYLACETIC ACID DERIVATIVES

Yasuhiko Hamazaki; Nobuo Ishiyama; Toshiyuki Yamamoto; Kenji Seri, and Reiko Sato, all of Tokyo, Japan, assignors to Kaken Chemical Co., Ltd., Tokyo, Japan

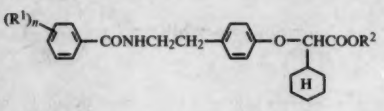
Filed Mar. 13, 1981, Ser. No. 243,447

Claims priority, application Japan, Apr. 10, 1980, 55-46243

Int. Cl.[3] **A61K** *31/24*; **C07C** *101/30*

U.S. Cl. 424—309 **6 Claims**

1. A benzaminoethylphenoxycyclohexylacetic acid derivative having the formula



(I)

wherein R^1 represents hydrogen atom, a halogen atom, hydroxyl group, a lower alkyl group or a lower alkoxy group; n is 1 or 2; and R^2 represents hydrogen atom, a lower alkyl group which can have a substituent of phenyl group, a lower alkoxycarbonyl group, 3,3,5-trimethylcyclohexyloxycarbonyl group or a heterocyclic group selected from the group consisting of furyl, thienyl, morphorino, benzothiozole, pyridyl or 3,4 methylenedioxyphenyl; hexadecyl group; phenyl group which can have a substituent of a lower alkyl group, a lower alkoxy group, a lower alkoxycarbonyl group or a halogen atom; a cyclohexyl group or α-[4-(4-chlorobenzaminoethyl)phenoxy]-α-cyclohexylacetoxycyclohexyl group.

6. An antihyperlipidemic composition which comprises an effective amount of a benzaminoethylphenoxycyclohexylacetic acid derivative according to claim **1** which has the formula (I) as an active ingredient and an inert pharmaceutical carrier.

4,318,924

COMBATING BACTERIA WITH N-CYCLOALKYL-N'-SUBSTITUTED-N'-ACYL-UREAS

Christa Fest, Wuppertal; Peter Kraus, Cologne, and Hans Scheinpflug, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

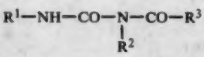
Filed Apr. 21, 1980, Ser. No. 141,832

Claims priority, application Fed. Rep. of Germany, May 12, 1979, 2919292

Int. Cl.[3] **A01N** *47/28*; **C07C** *127/00*

U.S. Cl. 424—322 **11 Claims**

1. An N-cycloalkyl-N'-substituted-N'-acyl-urea of the formula



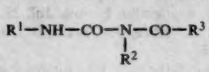
in which

R^1 is cyclohexyl,

R^2 is cyclohexyl, phenyl or di-C_{1-4}-alkyl substituted phenyl, and

R^3 is cyclohexyl, phenyl substituted by C_{1-4}-alkyl, C_{1-4}-alkoxy, halogen or C_{1-2}-haloalkyl, or phenyl substituted by nitro plus at least one member selected from the group consisting of C_{1-4}-alkyl, C_{1-4}-alkoxy, halogen or C_{1-2}-haloalkyl.

10. A method of combating bacteria which comprises applying to the bacteria, or to a habitat thereof, a bactericidally effective amount of a compound of the formula



in which

R^1 is cyclohexyl,

R^2 is cyclohexyl, phenyl or di-C_{1-4}-alkyl substituted phenyl, and

R^3 is cyclohexyl or phenyl substituted by C_{1-4}-alkyl, C_{1-4}-alkoxy, halogen or C_{1-2}-haloalkyl or phenyl substituted by nitro plus at least one member selected from the group consisting of C_{1-4}-alkyl, C_{1-4}-alkoxy, halogen or C_{1-2}-haloalkyl.

4,318,925

4-HOMOISOTWISTANE DERIVATIVES

Toshio Atsumi, Ashiya; Yoshiaki Takebayashi, Toyonaka; Masaru Fukui, Takarazuka, and Hisao Yamamoto, Kobe, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka and Kao Soap Co., Ltd., Tokyo, both of, Japan

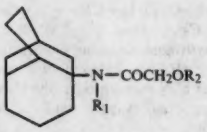
Continuation of Ser. No. 917,799, Jun. 22, 1978, abandoned. This application Mar. 20, 1980, Ser. No. 132,135

Claims priority, application Japan, Jul. 4, 1977, 52-80124

Int. Cl.[3] **C07C** *103/37*

U.S. Cl. 424—324 **6 Claims**

1. A compound of the formula,



wherein R_1 is hydrogen; R_2 is C_1–C_{11} alkyl, or non-toxic, pharmaceutically acceptable salts thereof.

4,318,926

METHOD OF CURING OR ALLEVIATING HERPES INFECTIONS AND PHARMACEUTICAL COMPOSITIONS SUITABLE THEREFOR

Karl H. Schmidt-Ruppin, Arlesheim; Bohumir Lukas, Basel, and Walter Wiesendanger, Münchenstein, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

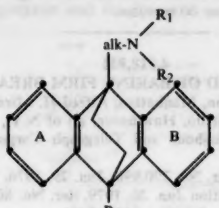
Filed Aug. 6, 1980, Ser. No. 175,627

Claims priority, application Switzerland, Aug. 14, 1979, 7429/79

Int. Cl.[3] **A61K** *31/135, 31/445, 31/40, 31/33*

U.S. Cl. 424—330 **7 Claims**

1. A method for the treatment of herpes infections in warm blooded animals infected with said infections, which comprises administering to said animals a daily dose of an antiherpetically effective amount of a compound of the formula



(I)

in which alk represents methylene or trimethylene, R_1 and R_2 independently of each other represent hydrogen or methyl, R_3 represents hydrogen and the rings A and B are unsubstituted, or a pharmaceutically acceptable acid addition salt of such a compound.

4,318,927

METHOD OF PRODUCING LOW CALORIE ALCOHOLIC BEVERAGE WITH STARCH-DEGRADING ENZYMES DERIVED FROM *CLADOSPORIUM RESINAE*

James J. Marshall, Miami, Fla., assignor to Lifeline Products, Inc., Plainfield, N.J.

Division of Ser. No. 46,482, Jun. 7, 1979, Pat. No. 4,234,686, which is a continuation-in-part of Ser. No. 892,747, Apr. 3, 1978, Pat. No. 4,211,842. This application Jun. 16, 1980, Ser. No. 159,950

Int. Cl.³ C12C *11/04*

U.S. Cl. 426—11 **4 Claims**

1. A method of producing a low calorie alcoholic beverage which comprises contacting or incorporating in a fermentation wort a mixture of starch-degrading enzymes recovered from the culturing of *Cladosporium resinae* (ATCC No. 20495) in a growth medium containing an assimilable carbon source and other nutrients.

4,318,928

PREPARATION OF COTTAGE CHEESE CONTAINING *STREPTOCOCCUS DIACETILACTIS*

Edmond L. Sing, 3860 Cheviot Pl., Indianapolis, Ind. 46226

Continuation-in-part of Ser. No. 105,102, Dec. 19, 1979, abandoned. This application Apr. 4, 1980, Ser. No. 137,243

Int. Cl.³ A23C *19/02*

U.S. Cl. 426—38 **5 Claims**

1. A method of making cottage cheese which comprises adding to the cottage cheese a sufficient amount of *Streptococcus diacetilactis* cells to cause a concentration in the finished cottage cheese of at least 1.0×10^6 cells per gram of said finished cottage cheese; said *Streptococcus diacetilactis* cells being:

(a) from 5 to 95 parts of a first strain of *Streptococcus diacetilactis* that produces substantial amounts of diacetyl in a milk culture; and

(b) from 5 to 95 parts of a second strain of diacetyl deficient mutant *Streptococcus diacetilactis* selected from the group consisting of mutant strains NRRL B-12070 and NRRL B-12071 that produces essentially no diacetyl in a milk culture.

4,318,929

PROCESS FOR OBTAINING NEW STRAINS OF YEAST FOR BREAD-MAKING AND NOVEL STRAINS OF YEAST THUS PREPARED

Philippe Clement, Roubaix, and Annie Loiez nee Hennette, Lille, both of France, assignors to Lesaffre et Cie, Paris, France

Filed Dec. 23, 1977, Ser. No. 863,952

Claims priority, application United Kingdom, Dec. 24, 1976, 54172/76

Int. Cl.³ A23L *1/28*; C12N *1/18*

U.S. Cl. 426—62 **35 Claims**

1. In processes for the production of novel strains of yeast, useful for the production of baker's yeast, including initially the creation of numerous strains by man-induced and man-controlled hybridization and/or mutation of parent or predecessor haploid and/or diploid yeast strains as genetic starting material, the improvement consisting essentially in a complete method for the reproducible identification and selection of useful yeast strains having novel properties, and isolation thereof from the larger group of said numerous created strains including non-useful and/or less useful strains, using techniques which do not rely upon measurement of the release of gas from cultivated yeast materials, which method comprises subjecting the said created yeast strains to a combination of the following test procedures:

(a) a first selection test,

consisting essentially in measuring the average multiplication coefficient of a produced strain by measurement of the optical density variation of a standard culture medium seeded with a suspension of cells of said strain in comparison with the optical density variation of said medium seeded with cells of a control strain(s) of the best baker's yeast adapted to maltose, and using the selection criterion that the selected strain(s) has a multiplication coefficient equivalent to at least 90% of that of said baker's yeast adapted to maltose;

in combination with at least one of the following tests (b), (c), (d) and/or (e):

(b) a second selection test,

consisting essentially in measuring the average multiplication coefficient (μ) of said produced strain by the same procedure as in said first test (a), but with the addition to the culture medium of a growth inhibiting acid, said acid being present in an amount sufficient to reduce by at least 50% the coefficient (μ_1) of the said control strain, and using the selection criterion that the selected strain(s) must exhibit a coefficient (μ) greater than that of said control strain (μ_1) in this acid-inhibited medium;

(c) a third selection test consisting essentially in

measuring the maltose adaptation of the said produced yeast strain by determining the amount of maltose subsisting in a standard culture medium, to which has been added a known amount of glucose and maltose, and after seeding said maltose and glucose-containing medium with cells of said strain, and using the selection criterion that the selected strain(s) must have consumed a level of at least 50% of the maltose which is consumed by said control strain in this test procedure;

(d) a fourth selection test consisting essentially in

measuring the invertase activity of said produced yeast strain by determining the production of reducing sugars of the non-plasmolysed yeast cells, and using the selection criterion that the selected strain produces less than 35 micromoles of reducing sugar (i.e., a demi-micromole of invert saccharose) in 5 minutes per mg of yeast dry matter at 30° C. and at a pH of 4.7 (i.e., an invertase activity of less than 35 units);

and/or

(e) a fifth selection test consisting essentially in

measuring, by the method described for said first test, the latent time (i.e., the delay in commencement of multiplication) of said produced strain(s) in said standard culture medium but which is modified to contain at least 20% by

weight of sucrose, and using as the selection criterion that the selected strain(s) has as short as possible a latent time with respect to said control yeast

whereby from said combination of selection tests the yeast strain(s) selected for forming a yeast culture will comply with and exhibit the selection criteria of said first test and at least one of said second, third, fourth and fifth tests and isolating the selected strain.

4,318,930

STRAINS OF YEAST FOR BREAD-MAKING AND NOVEL STRAINS OF YEAST THUS PREPARED

Philippe Clement, Roubaix, and Annie Loiez née Hennette, Lille, both of France, assignors to Lesaffre et Cie, Paris, France

Continuation-in-part of Ser. No. 863,952, Dec. 23, 1977. This application Aug. 4, 1978, Ser. No. 931,151

Claims priority, application United Kingdom, Dec. 24, 1976, 54172/76

Int. Cl.[3] **A23L** *1/28;* **C12N** *1/18*

U.S. Cl. 426—62 **4 Claims**

4. An active yeast composition in solid particulate form consisting essentially of an active dry baker's yeast obtained from man-made biologically pure yeast strain and having an emulsifying agent therewith, said composition having a dry matter content of between about 94% and 97% and being characterized by the fact that conjointly:

(a) in test A'_1 there is a gas release in 2 hours, of between 120 and 130 ml;

wherein, in said test A'_1 160 mg of dry matter of said dry yeast is rehydrated with 6 ml of distilled water at 38° C. and at the end of 15 minutes of rehydration adding the amount of water, together with 405 mg of NaCl, required to bring the total to 15 ml, to the product resulting from the said fifteen minutes rehydration and then adding the resulting rehydrated yeast/salt/water composition to 20 g of flour at 30° C., thereafter kneading the resulting mixture for 40 seconds to obtain a dough, maintaining said dough at 30° C. in a vessel for 13 minutes after the beginning of said kneading, thereafter hermetically sealing said vessel and measuring the total amount of gas produced, in ml, at 30° C. and 760 mm of Hg, after the expiration of 60 minutes, and then after the expiration of 120 minutes;

(b) in test B_1, there is a gas release in 3 hours of between 1500 and 1800 ml;

wherein, in said test B_1 1.6 g of yeast dry matter and 150 ml of water containing 50 g of NaCl per 1.5 liter of water, is added to 250 g of flour, and the mixture is kneaded for 6 minutes under conditions such that the temperature of the resulting dough at the end of said kneading is 27° C., that dough is then placed in the chamber of a Chopin zymotachygraph, and exactly 6 minutes after said kneading, said chamber is placed under pressure and maintained at 27° C., and recording the total gas release in ml on a graph at the expiration of 1 hour, and also after the expiration of 3 hours;

(c) in test A'_2, there is a gas release in 1 hour of between 52 and 60 ml;

wherein, in said test A'_2 the procedure of said test A'_1 is followed except that there is added to said flour 100 mg of saccharose, and the total amount of gas produced is measured after the expiration of 60 minutes;

(d) in test A'_3, there is a gas release in 1 hour, of between 47 and 54 ml;

wherein, in said test A'_3 the procedure of said test A'_1 is followed except that there is added to said flour 2 g of saccharose and the total amount of gas produced is measured after 60 minutes;

(e) in test A'_4, there is a gas release in 1 hour, of between 26 and 30 ml;

wherein, in said test A'_4 the procedure of said test A'_1 is followed except that there is added to said flour 5.5 g of saccharose, and the total amount of gas produced is measured after 60 minutes.

4,318,931

METHOD OF BAKING FIRM BREAD

Robert F. Schiffmann, Manhattan; Alfred H. Mirman, Nanuet, and Richard J. Grillo, Hawthorne, all of N.Y., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 700,990, Jun. 29, 1976, abandoned. This application Jun. 20, 1979, Ser. No. 50,398

Int. Cl.[3] **A21D** *8/06*

U.S. Cl. 426—243 **8 Claims**

1. A method of producing a firm bread comprising the steps of:

moulding a firm bread type dough into a plurality of one pound loaves;

placing each of said plurality of loaves in a different one of a plurality of metal baking pans;

proofing said plurality of loaves in said plurality of baking pans;

placing a metal pan cover over each of said plurality of baking pans;

partially baking said plurality of loaves in said plurality of covered baking pans in a hot air oven at a temperature of 375° to 425° F. for a first period of time of 10 to 12 minutes to achieve oven spring;

removing said pan covers from said plurality of baking pans; and

finish baking said plurality of loaves in said baking pans with said pan covers removed in a combined hot air and microwave oven operating simultaneously at an air temperature of 375° F. to 425° F. and with a microwave energy having a frequency equal to at least one of 915 MHz and 2450 MHz, a power of 25 to 100 watts per pound loaf and a power flux density of 5 to 25 watt hours per pound loaf for a second period of time of 10 to 12 minutes to complete the baking of said plurality of loaves and to evaporate a predetermined amount of moisture present in said plurality of loaves.

4,318,932

INSTANT MILK PROCESS

Neal L. Ewing, Livermore, and John J. Fisher, Danville, both of Calif., assignors to Foremost-McKesson, Inc., San Francisco, Calif.

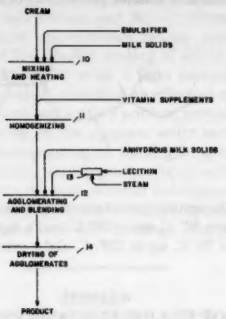
Continuation-in-part of Ser. No. 837,934, Sep. 29, 1977, abandoned, which is a continuation-in-part of Ser. No. 820,403, Aug. 1, 1977, abandoned, which is a continuation of Ser. No. 678,986, Apr. 21, 1976, abandoned, which is a continuation-in-part of Ser. No. 582,744, Jun. 2, 1975, abandoned. This application Jun. 12, 1978, Ser. No. 914,767

Int. Cl.[3] **A23C** *9/16*

U.S. Cl. 426—285 **12 Claims**

1. In a process for the manufacture of instant fat containing dry milk making use of an agglomerating chamber, the steps of supplying anhydrous dry milk powder to the chamber and causing the powder particles to be dispersed therein, further supplying moisture containing atomized material to the chamber, the material consisting of an atomized stable fat-water emulsion having the bulk of its fat globules less than 3 microns in size and atomized lecithin, said fat-water emulsion and said lecithin being atomized apart from each other and separately and simultaneously introduced into said chamber, each atomized material being caused simultaneously to commingle with the dispersed powder particles within the chamber, whereby moisture of the atomized material is absorbed by the powder particles to cause them to be made sticky and the sticky powder particles caused to contact and adhere together in the form of moist porous random aggregates, the atomized fat emulsion and the atomized lecithin being simultaneously distributed on the powder particles and the aggregates, discharging the ag-

gregates from the chamber, and then removing excess moisture from the aggregates and the fat-water emulsion thereon to



form a dry product, the fat content of the emulsion serving to impart a desired fat content to the final dry product.

4,318,933

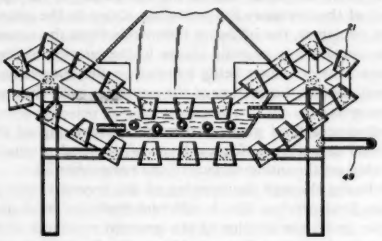
METHOD FOR DEBITTERING SOYBEANS

Harry W. Miller, Jr., Fredericktown, Ohio, assignor to Harry W. Miller, Jr. Corp., Fredericktown, Ohio

Division of Ser. No. 934,839, Aug. 18, 1978, Pat. No. 4,248,141. This application Oct. 14, 1980, Ser. No. 196,449

Int. Cl.³ A23L *1/20*

U.S. Cl. 426—431 **5 Claims**



1. A method for debittering soybeans and the like to destroy and extract the bitter taste therefrom in an open top processing tank having at least three treatment zones and provided with an exhaust hood thereabove and having spaced steam manifolds in each of the zones adjacent the bottom thereof with water injectors interposed between the steam manifolds, and into and lengthwise through which tank water flows, with a chain conveyor having a series of foraminous bottomed baskets arranged on and depending therefrom for passage through the processing tank, said method comprising the steps of:

a. preheating the water flowing lengthwise through said tank to approximately 198° F.;

b. Loading soybeans to be treated into said baskets and successively and intermittently moving said conveyor and said baskets through said tank and immersing the baskets and beans in the preheated water for approximately one minute in each of said zones;

c. introducing steam through the manifold in the first of said zones to increase the water temperature to approximately 214° F. and bubbling the steam upwardly therethrough to render the boiling water turbulent to roll and separate the beans and penetrate the skins thereof to expand and rupture the beans so that the enzymes on the outside surfaces thereof are destroyed by the intense heat enabling the volatile oil and gases to escape with the exhausting steam through the exhaust hood;

d. introducing water through the water injector and steam through the manifold in the second of said zones at a reduced temperature of approximately 212° F. as a filled basket enters that zone to continue to render the water therein turbulent;

e. and introducing water through the water injector and steam through the manifold in the third of said zones as a filled basket enters that zone at the same temperature of approximately 212° F. as in said second zone whereby the exhausting steam will carry off any remaining volatile gases and oils through the exhaust hood.

4,318,934

FLAVORING WITH BRANCHED CHAIN OLEFINIC ALCOHOLS

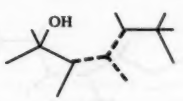
Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed Dec. 4, 1980, Ser. No. 212,887

Int. Cl.³ A23L *1/226*

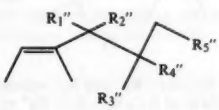
U.S. Cl. 426—534 **2 Claims**

1. A process for augmenting or enhancing the aroma or taste of a walnut flavored foodstuff comprising the step of adding to a walnut flavored foodstuff an aroma or taste augmenting or enhancing quantity of a composition of matter comprising a major proportion of compounds defined according to the structure:



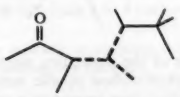
wherein in each of the molecules of the mixture one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represents a carbon-carbon single bond, said composition of matter produced according to the process comprising the steps of:

(a) dimerization of isoamylene in the presence of an acid catalyst to form a mixture of diisoamylene compounds defined according to the structure:



wherein R_1'', R_2'', R_3'', R_4'' and R_5'' represents hydrogen or methyl with three of R_1'', R_2'', R_3'', R_4'' and R_5'' representing methyl and the other two of R_1'', R_2'', R_3'', R_4'' and R_5'' representing hydrogen;

(b) reacting the resulting diisoamylene mixture with a compound selected from the group consisting of acetyl chloride and acetic anhydride in the presence of an acid catalyst to form a mixture containing a major proportion of compounds defined according to the structure:

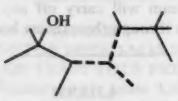


wherein in each of the molecules, one of the dashed lines is a carbon-carbon double bond and each of the other of the dashed lines represent carbon-carbon single bonds;

(c) reacting the resulting compound with methyl lithium at a temperature in the range of from 25° C. up to 50° C. in the

presence of an inert solvent thereby forming a mixture of organolithium salts; and

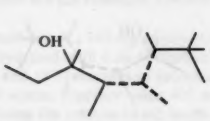
(d) reacting the resulting mixture of organolithium salts with dilute aqueous mineral acid at a temperature of from 0° C. up to about 50° C. thereby forming a mixture of compounds containing a major proportion of compounds having the structure:



wherein in each of the molecules, one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represent carbon-carbon single bonds; and

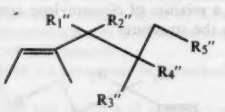
(e) distilling the resulting mixture at a vapor temperature in the range of from 71° C. up to 155° C., a liquid temperature in the range of from 74° C. up to 195° C. and a pressure in the range of from 2.8 mm/Hg up to 3 mm/Hg.

2. A process for augmenting or enhancing the aroma or taste of a cola beverage comprising the step of adding to a cola beverage an aroma or taste augmenting or enhancing quantity of a mixture of compounds containing a major proportion of compounds defined according to the structure:



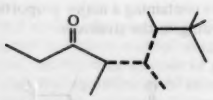
which mixture of compounds is produced according to the process comprising the steps of:

(a) dimerization of isoamylene in the presence of an acid catalyst to form a mixture of diisoamylene compounds defined according to the structure:



wherein R_1'', R_2'', R_3'', R_4'' and R_5'' represents hydrogen or methyl with three of R_1'', R_2'', R_3'', R_4'' and R_5'' representing methyl and the other two of R_1'', R_2'', R_3'', R_4'' and R_5'' representing hydrogen;

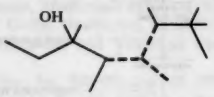
(b) reacting the resulting diisoamylene mixture with a compound selected from the group consisting of of propionyl chloride and propionic anhydride in the presence of an acid catalyst thereby forming a mixture containing a major proportion of compounds defined according to the structure:



wherein in each of the molecules, one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represents a carbon-carbon single bond;

(c) reacting the resulting mixture of ketones with methyl lithium at a temperature of from 25° C. up to 50° C. in the presence of an inert solvent thereby forming a mixture of organolithium compounds;

(d) reacting the mixture of organolithium compounds with dilute aqueous mineral acid at a temperature in the range of from 0° C. up to 50° C. thereby forming a mixture of compounds containing a major proportion of compounds having the structure:



and

(e) distilling the resulting mixture at a vapor temperature in the range of from 70° C. up to 78° C. and a liquid temperature in the range of 79° C. up to 105° C. and a pressure of 3 mm/Hg.

4,318,935

PROCESS OF FILLING CONTAINERS WITH A BASE FOOD PRODUCT AND A TOPPING

William E. Stussi, 8508 Roanoke Rd., San Gabriel, Calif. 91775

Continuation-in-part of Ser. No. 937,596, Aug. 28, 1978, Pat. No. 4,225,623, which is a continuation-in-part of Ser. No. 850,410, Nov. 10, 1977, abandoned. This application Apr. 11, 1980, Ser. No. 139,300

The portion of the term of this patent subsequent to Sep. 30, 1997, has been disclaimed.

Int. Cl.[3] **A23L** *1/04;* **A23C** *19/12;* **A23L** *1/187;* **A23B** *3/00*

U.S. Cl. 426—576 **24 Claims**

1. A process for filling a container with a base food product and a topping, comprising the steps of:

providing a container having a removable lid which closes one end of the container and having an opening at the opposite end of the container for providing access to the interior of the container, the lid being removable from the exterior of the container to provide access to the interior of the container, the container being inverted so the removable lid is positioned at the bottom of the container with the opening foremost;

introducing a food product through the opening of the inverted container to form a layer of the food product supported on the inside surface of the removable lid;

introducing through the opening of the inverted container a base food product that is different from the food product layer to fill the interior of the inverted container with the base food product above said layer, the food product forming said layer having a higher specific gravity or a specific gravity about the same as the base food product, the base food product being capable of being sufficiently solidified that, upon subsequently positioning the container in an upright position with the lid foremost, the base food product in the bottom of the container self-supports the food product layer as a topping above it;

sealing the opening in the container;

maintaining the container in the inverted position until the base food product is sufficiently solidified to self-support the food product layer; and

positioning the sealed container in the upright position for the base food product to self-support the food product layer above it as a topping beneath the removable lid.

4,318,936

METHOD OF MAKING STRAIN SENSOR IN FRAGILE WEB

David E. Moss; Karl E. Stone; Charles A. Bright, Jr., and Randy A. Rusch, all of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 23, 1981, Ser. No. 227,550

Int. Cl.[3] **C23C** *11/08*

U.S. Cl. 427—38 **3 Claims**

1. In a method of making a strain sensing semiconductive device in a fragile silicon web, an improvement for reducing

diaphragm breakage that comprises forming an operative device on one major surface of a silicon wafer portion before diaphragm formation, plasma depositing a blanket coating of silicon oxide onto said surface and device effective to allow deposition of a more etch-resistant silicon nitride coating, plasma depositing a first blanket coating of silicon nitride onto said silicon oxide coating to mask it from corrosive etchants, said silicon nitride coating providing an effective maskant even over a metal pattern on said surface portion, providing a silicon nitride blanket coating on the opposite wafer surface with an opening therein corresponding to the fragile web desired for said device, and etching said opposite silicon surface through said opening to form the web without deleteriously affecting the device, whereupon an operative device formed in a fragile diaphragm is produced and web breakage during device formation is avoided.

4,318,937

HEAT AND SOLVENT SENSITIVE RECORDING MATERIAL AND PROCESS TO USE IT

Claude Ceintrey, Neuville les Dieppe, France, assignor to Rhone-Poulenc Systemes, Creteil, France

Continuation-in-part of Ser. No. 912,546, Jun. 2, 1978, Pat. No. 4,252,601. This application Oct. 10, 1980, Ser. No. 196,078

Int. Cl.[3] **B05B** *5/00;* **B05D** *3/06;* **B32B** *3/10;* **G01D** *9/00*

U.S. Cl. 427—56.1 **18 Claims**

1. An opaque recording material for making transparencies for projection of information or for making photographic negatives for reproduction, said recording material comprising a transparent support coated with an opaque layer obtained from a mixture of an organic styrene resin pigment emulsion and a polyvinylidene chloride film-forming resin binder.

15. A process for making transparencies for recording of information which can be used for projection or reproduction by transparentizing portions of an opaque recording medium by application of heat and transparentizing other portions of the opaque recording medium by application of writing liquid, said process comprising applying heat and writing liquid in selectively different areas to the surface of the opaque layer of the opaque recording material of claim **1**, said writing liquid comprising a solvent for the styrene resin pigment and the amount of heat being sufficient to raise the temperature of the opaque layer to above its transparentizing temperature.

16. The process of claim **15** wherein the step of applying heat is carried out prior to the step of applying writing liquid, which comprises placing an original having infrared absorbing zones thereon in contact with the opaque recording material, exposing the original to irradiation with infrared rays to heat the infrared absorbing zones of the original allowing the temperature of the portions of the opaque layer of the opaque recording material, which are in contact with the infrared absorbing zones of the original to increase to at least its transparentizing temperature, separating the original and opaque recording material, and applying said writing liquid to selected areas of the remaining opaque zones of the opaque layer.

4,318,938

METHOD FOR THE CONTINUOUS MANUFACTURE OF THIN FILM SOLAR CELLS

Allen M. Barnett; Bill N. Baron, both of Newark; James V. Masi, Wilmington, and T. W. Fraser Russell, Newark, all of Del., assignors to The University of Delaware, Newark, Del.

Filed May 29, 1979, Ser. No. 43,315

Int. Cl.[3] **H01L** *31/18*

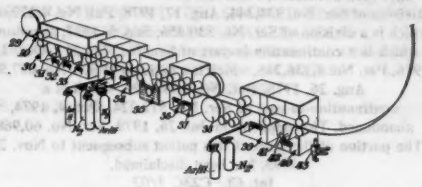
U.S. Cl. 427—75 **15 Claims**

1. A method for the substantially continuous fabrication of thin film solar cells by performing, on a substantially continuously moving, elongated, flexible conductive substrate, the following steps:

(a) depositing a first semiconductor layer on the said conductive substrate with the conductive substrate a first electrical contact;

(b) depositing a second semiconductor layer on said conductive substrate;

(c) forming an electrical junction between said first and said second semiconductor layers; and



(d) applying a second electrical contact to the unit resulting from said conductive substrate and from said first and said second semiconductor.

4,318,939

STABILIZED CATALYZED ORGANOPOLYSILOXANES

Ching-Ping Wong, Lawrence Township, Mercer County, N.J., assignor to Western Electric Co., Incorporated, New York, N.Y.

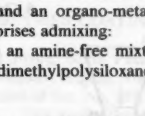
Filed Aug. 21, 1980, Ser. No. 180,202

Int. Cl.[3] **B05D** *5/12*

U.S. Cl. 427—96 **18 Claims**

1. A method of stabilizing a mixture of an organopolysiloxane and an organo-metallic curing catalyst against gelation comprises admixing:

(a) an amine-free mixture comprising 100 parts of a fluid dimethylpolysiloxane having the formula:



wherein n is an integer of from about 60 to about 850, and from 1 to 15 parts of a trimethoxy silane having the general formula:

$$RSi(OCH_3)_3$$

wherein R is an organic radical selected from the group consisting of a methyl radical and a vinyl radical wherein said vinyl radical has from 2 to 4 carbon atoms, together with;

(b) an amine-free mixture comprising 0.1 to 2 parts of a curing catalyst having the formula:

$$Ti(OR_1)_4$$

wherein R_1 is an alkyl radical having from 2 to 8 carbon atoms and 0.05 to 10 parts methanol and wherein the molar ratio of methanol to curing catalyst in the mixture is at least 2 to 1.

4,318,940
DISPERSIONS FOR ACTIVATING NON-CONDUCTORS FOR ELECTROLESS PLATING

Nathan Feldstein, Princeton, N.J., assignor to Surface Technology, Inc., Princeton, N.J.

Division of Ser. No. 934,344, Aug. 17, 1978, Pat. No. 4,220,678, which is a division of Ser. No. 830,456, Sep. 6, 1977, abandoned, which is a continuation-in-part of Ser. No. 731,212, Oct. 12, 1976, Pat. No. 4,136,216, which is a division of Ser. No. 607,506, Aug. 26, 1975, Pat. No. 3,993,799, which is a continuation-in-part of Ser. No. 512,224, Oct. 4, 1974, abandoned. This application Jul. 26, 1979, Ser. No. 60,968
The portion of the term of this patent subsequent to Nov. 23, 1993, has been disclaimed.
Int. Cl.³ C23C *3/02*
U.S. Cl. 427—98 **14 Claims**

1. A process for the electroless (chemical) plating of a substrate which cc mprises

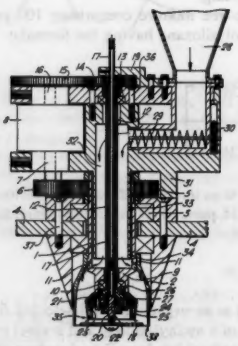
(a) immersing said substrate in a stable colloidal dispersion of at least one catalytic metal, said catalytic metal being selected from the group consisting of copper, nickel, cobalt and iron and mixtures thereof, and further wherein said colloidal dispersion is formed by the reaction of a compound bearing said catalytic metal with a precipitating agent with the addition of heat and the by product(s) derived from said precipitating agent is gaseous which is not detrimental to the change in appearance and plating results resulting from said colloidal dispersion, and

(b) contacting said treated substrate with a compatible electroless plating bath.

4,318,941
COATING OF SOLIDS

John E. Gillett, Gawsworth; John Isherwood, Congleton; Richard A. Hann, Frodsham, all of England; Philip Norton-Berry, Llandegla, Wales, and Margaret L. Steel, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 11, 1980, Ser. No. 120,328
Claims priority, application United Kingdom, Feb. 21, 1979, 06082/79
Int. Cl.³ B01J *2/00*
U.S. Cl. 427—212 **8 Claims**



1. A process for coating the particles of a particulate solid material, wherein

(a) the particulate solid material is supplied to a supply zone on the surface of a rotating body, the surface being a surface of rotation facing towards the axis of rotation of the body and having concavity in the axial direction,

(b) due to the acceleration imparted by the rotation of the body the particles of the solid material are caused to travel across the surface of rotation from the supply zone to a discharge zone axially remote from the supply zone,

(c) coating material is brought into contact with the particulate solid and distributed over the surface thereof during its travel across the surface of rotation and

(d) particles of the solid coated with coating material are discharged from the surface at the discharge zone using forces generated by the rotation of the body.

4,318,942
PROCESS FOR PRODUCING POLYCRYSTALLINE SILICON

Lloyd M. Woerner, Carlsbad, and Edward B. Moore, Capistrano Beach, both of Calif., assignors to J. C. Schumacher Company, Oceanside, Calif.

Continuation-in-part of Ser. No. 935,009, Aug. 18, 1978, abandoned. This application Aug. 27, 1979, Ser. No. 69,703
Int. Cl.³ C01B *33/02, 33/107*
U.S. Cl. 427—213 **2 Claims**

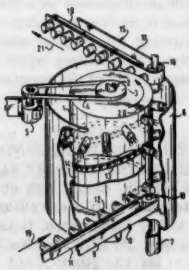
1. In a process for producing high purity silicon by the thermal decomposition of halosilane, the improvement comprising:

passing tribromosilane substantially undiluted through a bed of high purity silicon substrate particles in a product reactor at a reaction temperature of from about 600 to about 800 degrees C. and a pressure of at least about atmospheric pressure thereby effecting thermal decomposition of said tribromosilane to deposit high purity polycrystalline silicon on said substrate particles and to produce silicon tetrabromide and hydrogen as reaction products without the production of silicon polymers as an explosive by-product and amorphous silicon as a clogging byproduct wherein the bed of high purity silicon substrate particles is a moving or fluid bed and further including the step of heating the product reactor walls to a temperature of at least about 900° C. thereby preventing accumulation of product reactor wall scale.

4,318,943
APPARATUS FOR AT LEAST PARTLY REMOVING ADHERING LIQUID FROM AND/OR EVENLY DISTRIBUTING LIQUID OVER THE SURFACE OF ARTICLES

Jelle Veenstra, Diepenveen, Netherlands, assignor to Thomassen & Drijver-Verblifa NV, Derventer, Netherlands

Filed Oct. 22, 1979, Ser. No. 87,277
Claims priority, application Netherlands, Oct. 23, 1978, 7810558
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—240 **18 Claims**



1. A conveyor system comprising a non-magnetic drum mounted for rotation about an axis, a plurality of fixed magnets disposed within said drum in closely adjacent relation to said drum and defining a helical path, a supply conveyor for delivering magnetically attractive members to said drum generally in alignment with one end portion of said helical path, and a

receiving conveyor for receiving members conveyed by said drum at an opposite end portion of said helical path.

14. A method of selectively evenly distributing a previously applied liquid over the surface of an article or removing excess of such liquid from an article, said method comprising the steps of supplying articles to an exterior surface of a drum, attracting the articles to the exterior surface of the drum while rotating the drum, moving the articles in sequence about a generally helical path while on said drum and at a speed sufficient to effect the desired flow of liquid relative to the articles.

4,318,944
REDUCING THE CRACKING OF AUTODEPOSITED COATINGS

Wilbur S. Hall, Plymouth Meeting, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

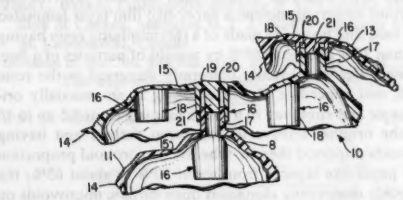
Continuation-in-part of Ser. No. 608,968, Aug. 29, 1975, abandoned. This application Mar. 29, 1978, Ser. No. 891,203
Int. Cl.³ B05D *1/18*
U.S. Cl. 427—377 **2 Claims**

1. In an autodepositing coating process wherein an organic coating is formed on a metallic surface in a bath containing an acidic aqueous coating composition containing dispersed solid resin particles such that without external electricity the thickness of the coating formed increases during the time the metallic surface is immersed in the composition wherein the volume of the coating composition in the bath is maintained by periodic or continuous replenishing of the bath components as metal is processed through the bath and wherein cracks are formed in the coating produced on said metallic surface immersed in a replenished bath, the improvement which comprises maintaining an environment substantially free of oxygen in the area of the metal surface having a wet coating thereon during at least a part of the time after said coated metal surface is withdrawn from the coating composition and before the coating is fused to prevent the formation of cracks in the wet coating, wherein the substantially oxygen free environment is maintained by surrounding the metallic surface with an inert gas.

4,318,945
UNDERWATER AQUARIUM DECORATION ASSEMBLY

Jerome N. Goldman, New York; Marvin A. Goldman, Great Neck, and Gerald Phillips, Oyster Bay, all of N.Y., assignors to Penn-Plax Plastics, Inc., Garden City, N.Y.

Filed Jan. 28, 1980, Ser. No. 115,920
Int. Cl.³ A01K *64/00*; B44F *9/04*
U.S. Cl. 428—15 **6 Claims**

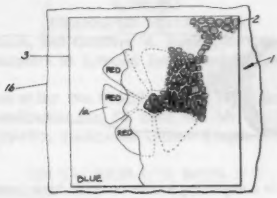


1. A rock like decorative assembly including
(a) a plurality of irregularly shaped shells of at least one form, each having side walls and a top wall,
(b) the outer surfaces of all said shells being mottled,
(c) at least one integral first connector means formed on the inside of the top wall of each of said shells,
(d) one integral second connector means formed on the outside of the top wall of at least one of said shells,
(e) said first and second connector means being mateable to removably connect vertically juxtaposed shells into a rock-like formation,
(f) said formation having varying appearances depending on the choice of shell form.

4,318,946
DECORATIVE SIMULATED STAINED GLASS LIGHT TRANSMISSIVE MOSAIC PANELS

Dallas Pavone, 6361 Beechmont Ave., Cincinnati, Ohio 45230

Filed Oct. 31, 1979, Ser. No. 89,915
Int. Cl.³ B44F *1/06*
U.S. Cl. 428—34 **18 Claims**



1. A decorative simulated stained glass light transmissive mosaic panel comprising:
a thin rigid light transmissive planar support sheet of methyl methacylate having a generally smooth planar upper surface;
a plurality of unequally spaced irregularly shaped plate-like rigid light transmissive colored members of methyl methacylate positioned on said surface of said sheet to form a desired decorative pattern; and
a thermally non-conductive opaque bonding material comprising a latex grouting, said grouting having thermal expansion properties substantially the same as said members, completely filling the areas between said members and extending no lower than said sheet surface such that the upper surfaces of said members are exposed, whereby light may be transmitted through said panel to form a pleasing stained glass-like effect.

4,318,947
POLYMER COATING AND CURING PROCESS FOR CATHETERS

Jong Joung, South Pasadena, Calif., assignor to The Kendall Company, Boston, Mass.

Division of Ser. No. 107,140, Dec. 26, 1979, Pat. No. 4,292,418. This application Jan. 26, 1981, Ser. No. 228,167
Int. Cl.³ A61M *25/00*; B05D *3/02, 1/18*; B32B *27/00*
U.S. Cl. 428—36 **3 Claims**

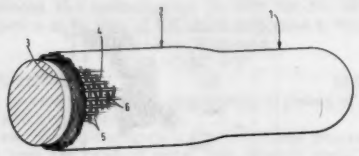
1. In a method of coating catheters made of natural or synthetic elastomers with a solution in an organic solvent of an organic peroxide cross-linking agent, and a linear polymer containing randomly distributed repeating units having the structures:

wherein A represents $X(CF_2)_mCH_2O$- and B represents $Y(CF_2)_nCH_2O$-, X and Y each being selected from the group consisting of hydrogen and fluorine, and m and n each being an integer from 1 to 8 inclusive, and
the improvement wherein there is included along with the organic peroxide an alkyl aluminum compound having the composition
$Al\ R_1R_2R_3$
wherein R_1 is selected from the group consisting of hydrogen and alkyl having from 2 to 8 carbon atoms and R_2 and R_3 are alkyl having from 2 to 8 carbon atoms.

4,318,948
ARTICLE COMPRISING CARBON FIBRES AND METHOD OF PRODUCING THE ARTICLE

Edward R. Hodgson, Birmingham, England, assignor to Fordath Limited, West Bromwich, England

Filed Oct. 1, 1980, Ser. No. 192,692
Claims priority, application United Kingdom, Oct. 16, 1979, 25945/79
Int. Cl.³ B32B *1/00, 1/10*
U.S. Cl. 428—68 8 Claims

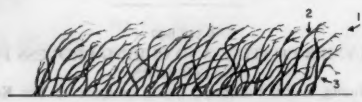


1. An article comprising a core covered by a covering layer, the covering layer comprising a plurality of tows of carbon fibres bonded by carbon to the core wherein, in the covering layer, each tow of fibres is incorporated in a substantially non-porous mass of carbon fibre reinforced carbon, and there being defined between adjacent tows substantial interstices.

4,318,949
COMPOSITE NAP SHEET AND PROCESS FOR PREPARING THE SAME

Miyoshi Okamoto, Takatsuki, and Mineto Fushida, Shiga, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 907,118, May 19, 1978, abandoned, and a continuation-in-part of Ser. No. 830,426, Sep. 6, 1977, abandoned. This application Mar. 31, 1980, Ser. No. 135,295
Int. Cl.³ B32B *5/02*
U.S. Cl. 428—91 24 Claims



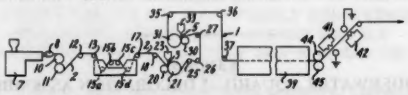
1. A composite sheet comprising a base portion having a plurality of naps embedded therein and having portions extending therefrom, a plurality of said naps comprising root portions connected to said embedded portions and extending from and free of said base portion and having tip portions extending from said root portion, a plurality of said naps comprising bundles of fine fibers bound at said root portions by a hardened adhesive organic compound, said base portion having an elastomer positioned among the embedded portions of said naps adjacent said root portions, the adherence between said fibers and said hardened organic compound being greater than the adherence between said hardened organic compound and said elastomer, a plurality of the fibers of said root portions being bound to one another by said hardened, adhesive organic compound, said plurality of root portions being substantially free of said elastomer, and a plurality of tip portions having slender or branched ends.

13. A process for preparing a composite sheet comprising a base portion having a plurality of naps extending therefrom, a plurality of said naps comprising root portions connected to said base portion and having tip portions extending from said root portions, said root portions comprising bundles of fine fibers bound with a hardened organic compound and said base portion having an elastomer positioned among and adjacent said bundles, said tip portions comprising slender or branched fine fibers, wherein the adherence between the fibers and the hardened organic compound is greater than the adherence between the hardened organic compound and the elastomer, impregnating said hardenable organic compound into a sheet which is mainly composed of bundles of separable fine fibers, impregnating said sheet with said elastomer and buffing and/or raising said sheet to form naps of said fiber bundles into slender or branched ends at least some of which comprise separated fine fibers, a plurality of said root portions being substantially free of said elastomer.

4,318,950
SYNTHETIC PAPERS AND METHOD OF MAKING THE SAME

Masanori Takashi, and Mitsuo Yoshiyasu, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Japan

Continuation of Ser. No. 712,250, Aug. 5, 1976, abandoned, which is a continuation of Ser. No. 510,770, Sep. 30, 1974, abandoned, which is a continuation of Ser. No. 197,757, Nov. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 809,629, Mar. 21, 1969, abandoned. This application Aug. 14, 1978, Ser. No. 933,673
Claims priority, application Japan, Mar. 26, 1968, 43-19204
Int. Cl.³ B32B *3/26*
U.S. Cl. 428—143 11 Claims



1. A synthetic opaque paper comprising; a base film layer comprising a thermoplastic resin, said base film layer being in a biaxially oriented state; said base layer comprising a film of a thermoplastic resin having less than 20% by weight of a fine inorganic filler dispersed in said resin; said base layer having microvoids dispersed therein; a paper-like film layer laminated to said base film layer and made of a thermoplastic resin having more than 25% and up to 65% by weight of particles of a fine, inorganic filler substantially uniformly dispersed in the resin thereof; said paper-like film layer being in an uniaxially oriented state and stretched in a range ranging from 2.5 up to 16 times the original transverse dimension thereof and having microvoids dispersed therein, wherein a microvoid proportion in said paper-like layer is from about 10% to about 65%; the microvoids comprising elongated open surface microvoids on a surface of said paper-like film layer and interior microvoids; said surface microvoids constituting open surface ruptures densely distributed throughout said surface, said surface ruptures having a major width in a direction transverse to the direction of transverse stretching of said paper-like layer determined principally by the size of the particulated filler contained in said surface ruptures and the length of said surface ruptures in a direction parallel to the direction of transverse stretching of paper-like layer being a function of the extent of stretching; and the interior microvoids being distributed in said paper-like layer and uniaxially elongated to define a cellular, fibrous structure.

4,318,951
STAIR MAT

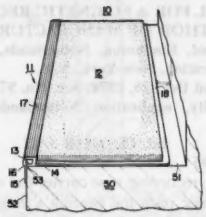
Hiromitsu Naka; Takeshi Miyashiro, and Yoshihide Sugimoto, all of c/o Tokyo Kenkyusho of Kabushiki Kaisha Naka Gijutsu Kenkyusho, No. 39, Oaza Shinmachi, Yashio-shi, Saitama-ken, Japan

Filed Dec. 27, 1979, Ser. No. 107,623

Claims priority, application Japan, Dec. 28, 1978, 53-181115[U]; Dec. 28, 1978, 53-181116[U]

Int. Cl.³ B32B *7/02, 3/26, 3/30*

U.S. Cl. 428—167 **2 Claims**



1. A stair mat comprising:

an edge cover being formed of flexible synthetic resin, including an edge bead cushion having a hollow portion therein extended along the length of the edge bead cushion and a non-skid surface portion as serrations along the cross-section on the upper surface thereof, said edge cover being adapted to be secured to the forward edge of a step;

an edge base integrally set on the under surface of the edge bead cushion formed of synthetic resin having greater rigidity than that of the edge bead cushion and adapted to be formed on the edge of a step;

a tread side fixing tongue integrally and horizontally extended from the rear edge of the edge base formed of a synthetic resin having greater rigidity than that of the edge bead cushion and adapted to be secured to the tread of a step;

a riser side fixing tongue integrally and downwardly extended from the front edge of the edge base formed of a synthetic resin having greater rigidity than that of the edge bead cushion and adapted to be secured to the riser of a step; and

a tread mat of carpet being fixed on the tread side fixing tongue, and adapted to be secured on the tread of a step.

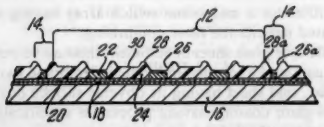
4,318,952
THREE-DIMENSIONAL DECORATIVE SURFACE

John C. Barker, Cowansville, and Ivan P. McLaughlin, Dunham, both of Canada, assignors to J. J. Barker Company Limited, St. Cowansville, Canada

Division of Ser. No. 932,548, Aug. 10, 1978, Pat. No. 4,233,343. This application Jul. 2, 1980, Ser. No. 165,356

Int. Cl.³ B32B *3/30*

U.S. Cl. 428—172 **11 Claims**



1. A decorative article having a three-dimensional patterned surface comprising a substrate having a flat surface coated with a coloured printable base; an inked layer comprising a layer of ink lines substantially free of silicone oil forming a printed pattern on said printable base, said ink lines having an ink line width of 1/16 to 3/16 inches; and a top coat of a hard resinous film-forming material; said top coat having a variable height thickness defining a contour of valleys, hills and plains; said topcoat having a height thickness of less than 1 mil over said ink lines, said hills have a height thickness of at least 4 dry mils adjacent said ink lines; said ink lines being formed from a wet ink composition and said top coat being formed from a liquid top coat composition; said ink composition and liquid top coat composition having differing surface tension properties effective to establish said contour by retraction of said liquid top coat composition from said wet ink lines.

4,318,953
TRANSFER MATERIALS

Brian J. Smith, and Geoffrey R. Taylor, both of London, England, assignors to Letraset International Limited, London, England

Continuation of Ser. No. 948,224, Oct. 3, 1978, abandoned. This application Jan. 28, 1980, Ser. No. 115,709

Claims priority, application United Kingdom, Oct. 4, 1977, 41247/77

Int. Cl.³ B32B *3/18;* **B41M** *3/12*

U.S. Cl. 428—200 **12 Claims**

1. A transfer material comprising a transparent or translucent carrier sheet bearing on one side a plurality of dry transferable indicia, each indicium bearing on its face remote from the carrier sheet a low tack pressure sensitive adhesive capable of adhering the indicium to a desired substrate, each of said indicia comprising a mixture of

(a) a film forming base consisting essentially of nitrocellulose and a high molecular weight plasticizer present in an amount of 60–120 parts by weight per hundred parts by weight of said nitrocellulose and,

(b) at least one colorant member selected from the group consisting of a heat stable dye and a pigment, said indicia may be transferred from said desired substrate under the action of heat and pressure to the surface of a rigid member selected from the group consisting of a polyvinyl chloride sheet, a cellulose triacetate sheet and a polymethylmethacrylate sheet without plastic flow and said indicia having an adhesive bond to said member which is stronger than the adhesive bond between the desired substrate and said adhesive, and said indicia component (a) being substantially free of low molecular weight material.

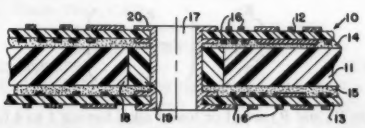
4,318,954
PRINTED WIRING BOARD SUBSTRATES FOR CERAMIC CHIP CARRIERS

Warren M. Jensen, Kirkland, Wash., assignor to Boeing Aerospace Company, Seattle, Wash.

Filed Feb. 9, 1981, Ser. No. 232,426

Int. Cl.³ B32B *3/00, 9/00;* **B05D** *5/12*

U.S. Cl. 428—209 **3 Claims**



1. A composite printed wiring board laminate comprising:

a support fabricated from graphite filament or aramid filament reinforced thermoset resin and having a coefficient of thermal expansion less than 2 microinch/inch/°F.;

a wiring board fabricated from fiber reinforced thermoset resin and having electrically-conductive strips applied to at least one surface thereof, said wiring board having a thermal coefficient of expansion substantially greater than 2 microinch/inch/°F.;

said wiring board being secured to said support by means of

a thermoset adhesive, whereby the apparent coefficient of thermal expansion of the said wiring board over its surface in the composite assembly approaches that of the said support member.

4,318,955

METHOD FOR MAKING A CARBONIC FRICTION PRODUCT

Valery V. Kulakov, ulitsa Sayanskaya, 11, kv. 473; Valentin P. Judin, ulitsa Svobody, 13/2, kv. 225; Antonina I. Pavlova, Sirenevy bulvar, 1, korpus 3, kv. 65; Anatoly M. Zlatkis, ulitsa Efremova, 12, kv. 15; Georgy N. Bagrov, Universitetsky prospekt, 23, korpus 4, kv. 16, all of Moscow; Ivan I. Zverev, ulitsa Sovetskaya, 7/9, kv. 23, Balashikha Moskovskoi oblasti; Iosif I. Khazanov, ulitsa Krupskoi, 9, kv. 28, Balashikha Moskovskoi oblasti; Alexei V. Suvorov, ulitsa Kalininskaya, 82, kv. 9, Balashikha Moskovskoi oblasti; Alexei A. Bobrinsky, 1 Vladimirskaya ulitsa, 24/1, kv. 3, and Vladimir A. Pasynkov, Yartsevskaya ulitsa, 27/7, kv. 23, both of Moscow, all of U.S.S.R.

Continuation of Ser. No. 936,813, Aug. 25, 1978, abandoned.

This application May 19, 1980, Ser. No. 151,142

Int. Cl.³ B29C *25/00*; C01B *31/00*

U.S. Cl. 428—235 **6 Claims**

1. A method for making a carbon friction material comprising: providing a reinforcing support containing a series of layers of interwoven carbon fibers wherein each of said layers are partially penetrated by a series of oriented individual fibers, said penetration being accomplished by forcing a fluid, containing the individual fibers, sequentially through each layer of interwoven carbon fibers; impregnating said reinforcing support with a binder; subjecting said reinforcing support to a heat treatment to obtain a blank; machining said blank for obtaining a desired product, with subsequent saturation of the resultant product with pyrocarbon and heat treatment thereof at a graphitization temperature.

4,318,956

SOIL RELEASE ON POLYESTER TEXTILES USING CATIONIC WATER SOLUBLE ADDITION POLYMER

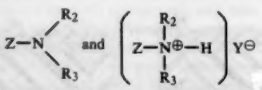
Travis E. Stevens, Ambler, and Martha H. Wolfersberger, Perkasie, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Aug. 15, 1980, Ser. No. 178,326

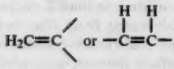
Int. Cl.³ B05D *3/02*; B32B *7/00, 27/00*; D06M *15/12*

U.S. Cl. 428—265 **12 Claims**

1. A method of conferring soil release properties on woven or knit polyester fabrics comprising the steps of incorporating into the fabric, 0.2–10%, solids basis, by weight based on fiber of an aqueous composition of an addition polymer, which is soluble in an aqueous solution when in salt form, having mer units of one or both of the amine or amine salt units of the formulae:



wherein R_2 and R_3 are H or lower alkyl having 1 to 4 carbon atoms, or together form a cycloaliphatic or cycloaromatic ring having up to 6 carbon atoms, and Z is an addition polymer chain, and containing mer units from at least one monoethylenically unsaturated monomer having a group of the formula



there also being present in the polymer chain pendant —COOH groups in an amount corresponding to a mer ratio in an amount of amine and/or amine salt units: —COOH groups of between 100:1 and 1:1, and drying the polyester fabric.

12. A woven or knit polyester fabric prepared by the method of claim **1**, **2**, **3**, **4**, **5**, **6**, **7**, **8**, **9**, **10** or **11**.

4,318,957

CARRIER FOIL FOR A MAGNETIC RECORDING TAPE, AND METHOD OF MANUFACTURING SAME

Bernard P. Videc, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,274

Claims priority, application Netherlands, Jan. 5, 1978, 7800122

Int. Cl.³ G11B *5/62*

U.S. Cl. 428—295 **3 Claims**

1. A magnetic recording tape carrier foil comprising a thermoplastic synthetic resin foil bearing a magnetizable coating, characterized in that in the longitudinal direction the foil has a Young's modulus E_1 of at most 4000 N/mm² and in the transverse direction the foil has a Young's modulus of at least 1.3 E_1.

4,318,958

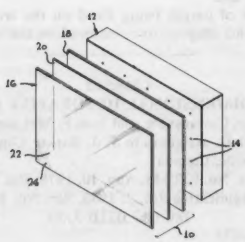
FLEXIBLE, HIGH CONTRAST, NON-GLARE, POLARIZING FILTER FOR AN ILLUMINATED SWITCH ASSEMBLY

David M. Piatt, Woodland Hills, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 21,395, Mar. 19, 1979, abandoned. This application Aug. 25, 1980, Ser. No. 181,460

Int. Cl.³ B32B *17/06*; N01N *9/00*

U.S. Cl. 428—332 **5 Claims**



1. A filter for a membrane switch array having selectively illuminated indicia, the filter comprising:

(a) a flexible glass sheet of sufficient thinness to permit touch actuation of a selected individual membrane switch of said array, said sheet having its obverse surface coated with a non-glare coating having properties specifically adapted for use with glass,

(b) a flexible polarizer sheet of sufficient thinness for said touch actuation, and

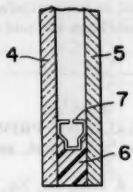
(c) transparent bonding material joining the reverse side of said glass sheet to said polarizer sheet so that the resulting filter when associated with the switch substantially reduces glare and enhances contrast in the illuminated indicia.

4,318,959

LOW-MODULUS POLYURETHANE JOINT SEALANT

Robert M. Evans, 1365 Forest Hills Blvd., Cleveland Heights, Ohio 44118, and Thomas M. Leonard, 2086 Warren Rd., Lakewood, Ohio 44107

Filed Jul. 3, 1979, Ser. No. 54,491
Int. Cl.³ D02G 3/00; B32B 27/40
U.S. Cl. 428—364 13 Claims



1. A laminate comprising two layers of glass secured together along their inner edge portions by an interposed layer of an elastomeric polyurethane sealant composition having a Shore A durometer hardness not in excess of 40 and an elongation of at least 150 percent, said polyurethane composition containing 2 to 8 percent by weight of a fibrillated polyolefin with a surface area of at least 5 square meters per gram and 8 to 30 percent by weight of a compatible cofiller that stabilizes the composition to prevent substantial exudation of liquid.

4,318,960

GLASS FIBER SIZE COMPOSITION COMPRISING MALEIC ANHYDRIDE GRAFT COPOLYMER

Frank P. McCombs, and Michael G. Roberts, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 849,147, Nov. 7, 1977, abandoned, Continuation-in-part of Ser. No. 354,568, Apr. 26, 1973, abandoned. This application Jun. 22, 1979, Ser. No. 51,268
Int. Cl.³ B32B 17/02, 17/04; C08K 9/06; D02G 3/18
U.S. Cl. 428—378 5 Claims

1. Glass fibers having a size coating thereon, said size coating comprising a preformed film-forming graft polymer formed of a trunk polymer selected from the group consisting of polybutadiene and copolymers of butadiene and at least one monomer selected from the group consisting of styrene, acrylonitrile, methacrylonitrile, alkyl acrylates and methacrylates wherein the alkyl groups have from 1 to 4 carbon atoms and vinyl pyridine, on which trunk polymer there is grafted a monomer of maleic anhydride, and a glass fiber anchoring agent in the form of an organosilicon compound.

4,318,961

MAGNETIC RECORDING MEDIUM

Tosiaki Ide; Akio Watanabe, and Tatsuo Uehori, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1980, Ser. No. 200,033
Claims priority, application Japan, Nov. 9, 1979, 54-144301
Int. Cl.³ B05D 5/12
U.S. Cl. 428—425.9 4 Claims

1. A master magnetic recording medium which comprises a polymer film substrate coated with a magnetic layer comprising a binder, a metallic magnetic powder A obtained by a wet reduction and a metallic magnetic powder B obtained by a dry reduction wherein both said magnetic powders A and B have each coercive force of 1800 Oe or higher and each saturated magnetization σs of 130 emu/g. or higher and a ratio of said magnetic powder A to said magnetic powder B is in a range of 0.1 to 10 by weight.

4,318,962

METALLIZED MOLDED REFLECTOR FOR A VEHICLE HEADLAMP OR FOG LAMP

David G. Boucher, Wolverhampton, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Dec. 3, 1979, Ser. No. 99,884
Claims priority, application United Kingdom, Dec. 12, 1978, 48200/78
Int. Cl.³ B32B 15/08
U.S. Cl. 428—458 5 Claims

1. A moulded reflector for a vehicle headlamp or fog lamp, said reflector having a surface and a metallic reflective coating thereon, said reflector comprising a cured unsaturated polyester resin based thermosetting moulding composition containing, as a curing initiator, an azo compound capable of forming free radicals at the moulding temperature.

4,318,963

TREATMENT OF CELLULOSIC MATERIALS

Richard D. Smith, 224 Early, Park Forest, Ill. 60466

Filed Jan. 21, 1980, Ser. No. 113,810
Int. Cl.³ B44D 1/092; B05D 3/00, 3/02, 1/18
U.S. Cl. 428—537 6 Claims

1. A method for treating cellulosic materials comprising the steps of preparing a solution of a metal alkoxide in an alcohol, drying said solution to provide a dried metal alkoxide, dissolving the dried metal alkoxide in alcohol in the presence of carbon dioxide to provide a second solution, and applying the second solution to a cellulosic material.

4,318,964

AUTOPIN MACHINE

Irwin Zahn, New York, N.Y., and Heinrich F. Meyer, Ormond Beach, Fla., assignors to General Staple Company, Inc., New York, N.Y.

Continuation of Ser. No. 877,093, Feb. 13, 1978, which is a division of Ser. No. 773,274, Mar. 1, 1977, abandoned. This application Mar. 28, 1979, Ser. No. 24,587
Int. Cl.³ F16B 18/08; H01R 13/04
U.S. Cl. 428—572 5 Claims

1. A coiled strip of electrically conductive material for use in an apparatus for inserting electrical terminals in a substrate; said supply strip comprising a plurality of integrally connected preformed electrical terminal pins; wherein said performed electrical terminal pins terminate at opposite ends in pointed regions for separation; integrally connected adjacent pointed end portions of adjacent pins forming notched regions in said supply strip, said supply strip being in coiled form.

4,318,965

BI-METALLIC THERMO-BARRIER MATERIAL AND METHOD OF WELDING

Winford Blair, La Mesa, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Jul. 2, 1980, Ser. No. 165,276
Int. Cl.³ B23B 3/12; B23V 1/04
U.S. Cl. 428—593 10 Claims

1. A method of manufacturing thermo-barrier material comprising at least three stacked cellular core structures with nodes projecting in opposite directions from a midplane and flat plate material sandwiched between each of the stacked cellular core structures and positioned on the outer surfaces of the outermost cellular core structure to form outer surface thereon, comprising the steps of:

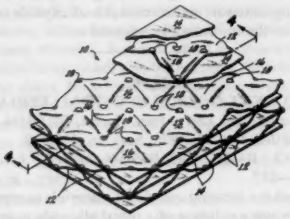
selecting component material of selected size;

providing a plating material between the node and flat plate material contacting surfaces of at least one of the cellular core structures;

applying a braze alloy to the nodes of the remaining cellular core material;

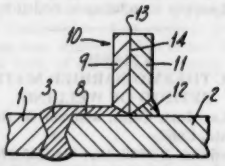
securing together the cellular core material with braze alloy coated nodes and their associated flat sheet material;

placing the secured together components on a reference surface;
placing the secured together components and reference surface into a furnace;
providing means for applying pressure to the secured components;
evacuating the furnace;
elevating the furnace temperature for melting the braze material;
cooling the furnace and removing the now brazed together components;
securing together the now brazed together components and the remaining components;



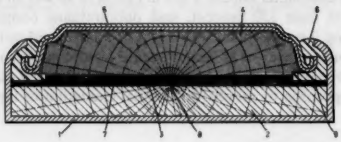
placing the secured brazed together and remaining components on a reference surface;
placing the secured brazed together components, remaining components and reference surface into a furnace;
applying a pressure between the brazed together components, remaining components and the reference furnace;
evacuating the furnace; and
elevating the temperature within the furnace and maintaining that elevated temperature sufficiently long to cause a eutectic melt of the plating materials and diffuse that plating material into the base material of the adjacent components creating a diffusion bond thereby.

4,318,966
WELDED STRUCTURES
Richard Fawcett, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Mar. 31, 1980, Ser. No. 135,686
Int. Cl.[3] B23K *35/00*
U.S. Cl. 428—683 **7 Claims**



1. A welded structure for use in a corrosive environment including a weld between components formed from metals of a knife-line corrodable combination in which each path liable to knife-line corrosion, from the corrosive environment to each metal-metal interface that is liable to knife-line corrosion in the load bearing region of the weld,
(A) has a length at least equal to the anticipated extent of knife-line corrosion along that path during the design life of the structure, and
(B) comprises a continuously welded interface between:
1. a substrate consisting of:
(a) the surface of one of said components between the weld and an appendage that is
(i) integral with said one component, or
(ii) welded to said one component with a weld metal that forms a knife-line corrodable combination neither with the metal of said appendage nor with the metal of said one component, and
(b) at least part of the surface of said appendage, and
2. a layer of metal extending over said substrate from the weld between said components, said layer covering and being continuously fused to said substrate and being formed from a metal which forms a knife-line corrodable combination with the metal of said one component and with the metal of said appendage, so that the end of the path that is exposed to the corrosive environment is the junction between said layer and said appendage at the end of said layer.

4,318,967
LONG-LIFE GALVANIC PRIMARY CELL
Paul Ruetschi, Yverdon, Switzerland, assignor to Leclanche' S.A., Switzerland
Filed Dec. 8, 1980, Ser. No. 213,862
Claims priority, application Switzerland, Dec. 13, 1979, 11047/79
Int. Cl.[3] H01M *2/18*
U.S. Cl. 429—48 **7 Claims**

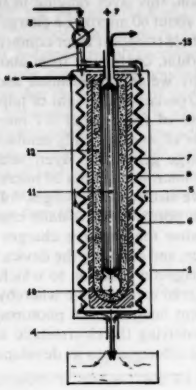


1. A galvanic primary cell of the type intended for low current loads and having long storage and service life, containing a positive electrode, a negative electrdoe, and an electrolyte, wherein the improvement comprises
a thin film or foil of inert material, impermeable to said electrolyte, disposed between said positive electrode and said negative electrode, and including at least one current-focusing aperture, the area of said aperture being at least ten times smaller than the area of said film or foil, the thickness l of said film or foil and the radius r_f of said aperture conforming to the relationship $4l/r_f \leqq 10$.

4,318,968
BATTERIES, ACCUMULATORS AND ELECTROCHEMICAL GENERATORS WITH NON-METALLIC ELECTRODES OR ELECTRODES IN SOLUTION
Michel Berger, St. Lambert Des Bois; Jacques Lys, Versailles, and Georges Demaire, Bonnelles, all of France, assignors to Societe e'Etudes et de Recherches en Sources d'Energie Nouvelles, Bonnelles, France
PCT No. PCT/FR79/00062, § 371 Date Mar. 11, 1980, § 102(e) Date Mar. 11, 1980, PCT Pub. No. WO80/00284, PCT Pub. Date Feb. 21, 1980
PCT Filed Jul. 11, 1979, Ser. No. 197,348
Claims priority, application France, Jul. 11, 1978, 78 20637
Int. Cl.[3] H01M *4/36*
U.S. Cl. 429—105 **18 Claims**

1. A battery, accumulator or electrochemical generator of electric energy, comprising:
a cathode comprising at least one metal hydroxide or oxide dissolved or suspended in an aqueous alkaline electrolyte or supported on a conductive metallic substrate in said aqueous alkaline electrolyte, said cathode being capable of being activated and regenerated by the passage of an oxygen containing gas through the active materials of said cathode; and
an anode comprising at least one metal halide or alkaline

halide salt, the halide ions of said salt being converted to an oxygenated product which is capable of being decomposed with the liberation of oxygen thereby permitting said liberated oxygen to be recycled to said cathode.



4,318,969

ELECTROCHEMICAL CELL

Emanuel Peled, Even Yehuda, Israel, and Anthony Lombardi, Winchester, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 21, 1980, Ser. No. 208,977

Int. Cl.[3] H01M *4/36*

U.S. Cl. 429—105 **13 Claims**

1. A nonaqueous electrochemical cell comprising

an oxidizable anode electrode comprising

a bulk region including a mixture of an oxidizable metal and an element having an oxidation potential less than said oxidable metal, and

a protective coating, surrounding the bulk region, including an intermetallic phase of said oxidizable metal and said element and containing less of said oxidizable metal than said bulk region;

a reducible liquid cathode material; and

a liquid electrolyte in contact with the anode electrode and cathode material.

4,318,970

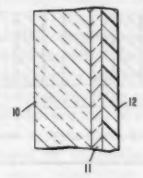
PROCESS FOR FABRICATING PHOTOSENSITIVE LAYERS ON PLASTIC SUBSTRATES

Irwin J. Kurland, North Hollywood, and Andrejs Graube, Marina Del Rey, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 4, 1980, Ser. No. 137,343

Int. Cl.[3] G03C *5/04*

U.S. Cl. 430—2 **23 Claims**



1. A process for fabricating a preholographic element supported on an optically transparent hydrophobic substrate which comprises:

(a) forming a layer of a glassy, optically transparent, polar, moisture barrier material about 0.2 to 10 μm thick on the hydrophobic substrate by a process which generates a temperature at the substrate of less than that of its softening point at which it deforms; and

(b) forming a layer of a hydrophilic, photosensitive material on at least a portion of the moisture barrier layer, the moisture barrier layer providing a barrier against diffusion of water vapor from the hydrophobic substrate into the hydrophilic, photosensitive layer such that over the lifetime of the pre-holographic element, no more than about 2×10^{-6} g H_2O/cm^2 is transmitted therethrough.

4,318,971

METHOD OF FORMING FLUORESCENT SCREEN OF COLOR PICTURE TUBE

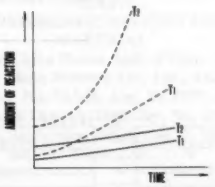
Masahiro Nishizawa; Kiyoshi Miura; Hiroshi Yokomizo; Osamu Sasaya, all of Mobara; Hajime Morishita, Tokyo, and Shoichi Uchino, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 12, 1981, Ser. No. 234,012

Claims priority, application Japan, Apr. 4, 1980, 55-43587

Int. Cl.[3] G03C *5/00*

U.S. Cl. 430—28 **2 Claims**



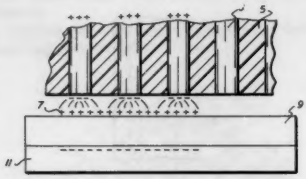
1. In a method of forming a fluorescent screen of a color picture tube comprising: applying a photosensitive resin mainly containing diazonium salt to the inner surface of a face panel of the color picture tube so that a photosensitive resin film is formed on said panel, making sticky the portion of said film where a phosphor layer is going to be formed by photosensitive reaction and absorption of moisture in the air, and adhering powdery material such as phosphor powder and/or graphite powder on said sticky portion of said film, the improvement wherein a binder which does not substantially raise dark reaction is added to said photosensitive resin and resultant mixture is applied to said face panel to form a film.

4,318,972

METHOD FOR INDUCING AN ELECTROSTATIC IMAGE IN A CONDUCTIVE MEMBER

James M. Hardenbrook, Altamonte Springs, Fla., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 21, 1980, Ser. No. 142,565
Int. Cl.[3] G03G *13/18*
U.S. Cl. 430—31 11 Claims



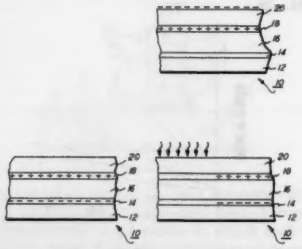
1. A process for creating an electrostatic latent image in a sectionally conductive layer, said sectionally conductive layer comprising an electrically insulating material having extended therethrough a plurality of conductive paths, which comprises bringing said sectionally conductive layer into proximity with an original electrostatic latent image on an insulating substrate, applying substantially the same electrical bias to the conductive paths on the side of said sectionally conductive layer opposite said latent image and to the side of said electrically insulating substrate opposite said sectionally conductive layer, providing a dielectric layer on said side of said sectionally conductive layer opposite said latent image, electrically grounding the side of said dielectric layer opposite said sectionally conductive layer, and separating said sectionally conductive layer and latent image from each other.

4,318,973

OVERCOATED INORGANIC LAYERED PHOTORESPONSIVE DEVICE AND PROCESS OF USE

George A. Brown, Penfield; Lloyd A. Relyea, Webster; Merlin E. Scharfe, and Heinz W. Pinsler, both of Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 127,176, Mar. 5, 1980, Pat. No. 4,287,279.
This application Mar. 2, 1981, Ser. No. 239,239
Int. Cl.[3] G03G *13/22*
U.S. Cl. 430—31 4 Claims



1. An electrophotographic imaging method comprising providing a photoresponsive device comprised of a substrate having a thickness of from about 5 mils to about 100 mils; a layer of hole injecting material capable of injecting holes into a layer on its surface, this layer being comprised of trigonal selenium and ranging in thickness of from about 0.5 microns to about 10 microns; a hole transport layer in operative contact with the hole injecting layer, this layer being comprised of a halogen doped selenium arsenic alloy, wherein the percentage by weight of selenium present is from about 99.5 percent to about 99.9 percent, the percentage by weight of arsenic present is from about 0.1 percent to about 0.5 percent, and the halogen is present in an amount of from 10 parts per million to about 200 parts per million, this layer ranging in thickness of from about 5 microns to about 60 microns; a charge generating layer overcoated on the hole transport layer comprised of an alloy of selenium and tellurium, containing from about 70 percent to about 90 percent by weight of selenium and from about 10 percent to about 30 percent by weight of tellurium, said layer ranging in thickness of from about 0.1 microns to about 5 microns; and a layer of an electrically insulating organic resin overlaying the charge generating layer, said layer having a thickness of from 5 microns to about 25 microns, charging the device with negative electrostatic charges, followed by charging the device with positive electrostatic charges in order to substantially neutralize the negative charges residing on the surface of the device, and exposing the device to an imagewise pattern of electromagnetic radiation to which the charge carrier generating material is responsive whereby there is formed an electrostatic latent image on the photoresponsive surface, and optionally transferring the electrostatic latent image to a permanent substrate subsequent to its development with toner.

4,318,974

COPOLYCARBONATE MATERIALS FOR FLASH FUSING TONERS

Thomas J. Pacansky, San Jose, Calif.; Robert J. Gruber, Pittsford, and John F. Knapp, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 6, 1980, Ser. No. 194,484
Int. Cl.[3] G03G *9/10*
U.S. Cl. 430—108 2 Claims

1. An improved developer composition useful in imaging systems employing flash fusing comprised of toner particles, and carrier particles, wherein the toner particles consist of a poly-(4,4'-isopropylidene diphenylene oxdiethylene carbonate), and carbon black, and the carrier particles consist of steel, said toner particles possessing an intrinsic viscosity of from about 0.10 to about 0.6 deciliters per gram, a melt flow temperature from 70° C. to about 125° C., a flash fusing energy of from about 3 joules/inch^2, to 8 joules/inch^2, and a glass transition temperature of 59° C.

4,318,975

DRY FILM MULTILAYER PHOTORESIST ELEMENT

Vladimir N. Kuznetsov, ulitsa Jubileinaya, 6, kv. 73; Nadezhda F. Smirnova, ulitsa Sovetskaya, 13, kv. 33, and Vladimir D. Karpov, ulitsa Kirova, 60, all of Istra Moskovskoi oblasti, U.S.S.R.

PCT No. PCT/Su79/00131, § 371 Date Aug. 25, 1980, § 102(e) Date Aug. 4, 1980, PCT Pub. No. WO80/01321, PCT Pub. Date Jun. 26, 1980
PCT Filed Dec. 14, 1979, Ser. No. 205,444
Claims priority, application U.S.S.R., Dec. 25, 1978, 2695701
Int. Cl.[3] G03C *1/78*
U.S. Cl. 430—260 12 Claims

1. A dry film photoresist which is a flexible laminated system comprising a solid polymeric substrate with a thickness of from 15 to 100μ, a light-sensitive layer having a thickness of 4 to 20μ comprising at least one light-sensitive compound capable of forming free radicals upon exposure to UV-radiation, at least one unsaturated compound containing in its molecule ethylene-like

bonds,

and also at least one polymer layer, and a protective polymeric film with a thickness of from 5 to 50μ located above the light-sensitive layer, characterized in that between the solid poly-

meric substrate and the light-sensitive layer there is an intermediate polymeric layer, transparent to UV-radiation within the range of 300 to 400 nm, having a thickness of 3 to 15μ consisting of a polymeric alcohol or a polymeric ester or a polyamide, or a halogenated polymer, or polyacrylonitrile, or mixtures thereof, all said four layers being bonded therebetween by adhesion forces so that the adhesion of said polymeric protective film to said light-sensitive layer is less than the cohesion strength of said light-sensitive layer, the adhesion of said solid polymeric substrate to said intermediate polymeric layer is less than the adhesion of said intermediate polymeric layer to the light-sensitive layer and the adhesion force of each of said three layers is less than the cohesion strength of each of said layers.

4,318,976

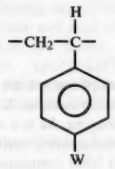
HIGH GEL RIGIDITY, NEGATIVE ELECTRON BEAM RESISTS

Jing S. Shu, Plano; Wei Lee, Richardson; Gilbert L. Varnell, Dallas, all of Tex., and John L. Bartelt, Westlake Village, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 27, 1980, Ser. No. 200,652
Int. Cl.³ B05D *3/06*
U.S. Cl. 430—287 **8 Claims**

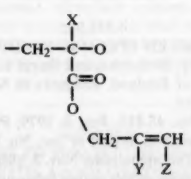
1. A method of forming a patterned, high resolution, high energy radiation negative resist, comprising the steps of:

forming a thin film of a copolymer formed of a first monomer having the structure



where

W is selected from the group consisting of H, F, Cl, Br, I, NO_2, CN and OCH_3, and a second monomer having the structure



where

X is selected from the group consisting of H, CH_3, and Cl, and Y and Z are selected from the group consisting of H and CH_3;

selectively exposing said copolymer film to high energy radiation in a predetermined pattern until substantial cross-linking of said copolymer is effected in the exposed areas; and

developing the resist image by exposing said copolymer film to a solvent which selectively removes only the unexposed areas while leaving the exposed copolymer film in the desired pattern.

4,318,977

COBALT (III) COMPLEX IMAGING COMPOSITIONS HAVING IMPROVED PHOTOGRAPHIC PROPERTIES

Thap DoMinh, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 87,190, Oct. 22, 1979, abandoned. This application Feb. 23, 1981, Ser. No. 237,171
Int. Cl.³ G03C *1/52*
U.S. Cl. 430—336 **11 Claims**

1. A light-sensitive image-forming composition, comprising, in admixture,

(a) a reducible cobalt(III) complex containing amine ligands;

(b) an aromatic dialdehyde which forms, in the presence of amines, a reducing agent for said cobalt(III) complex; and

(c) as an organic oxidizing agent, an s-triazine in an amount sufficient to reduce the contrast of the composition, when imagewise exposed in layer form and developed by heat, below that obtained by imagewise exposing and heat-developing the same composition in layered form but without said oxidizing agent.

4,318,978

PHOTOSENSITIVE FILM AND METHODS

Nicholas F. Borrelli, Elmira, and Peter L. Young, Horseheads, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 739,121, Nov. 5, 1976. This application Apr. 17, 1980, Ser. No. 141,061
Int. Cl.³ G03C *7/00, 5/22*
U.S. Cl. 430—346 **2 Claims**

1. A method for photographically recording full-color optical images which comprises the step of projecting with bleaching light at exposure levels a selected real full-color image onto a photosensitive thin film which includes at least one metal-dielectric layer consisting of a metal sub-film and a transparent dielectric over-film covering said metal sub-film, said metal-dielectric layer being produced by:

(a) depositing a discontinuous metal island film composed of a metal selected from the group consisting of Ag, Pb, Cu, Al, Cr and Ge on a support, said film having an apparent thickness in the range of about 15–150Å, and including metal islands ranging in size from about 100–1000Å; and

(b) depositing over said discontinuous metal island film a transparent covering film consisting at least predominantly of a dielectric acceptor material selected from the group consisting of AgCl, AgBr, AgI, and PbI_2.

4,318,979

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Takeshi Habu, and Chika Honda, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 70,846, Aug. 29, 1979, abandoned. This application Dec. 10, 1980, Ser. No. 215,011
Claims priority, application Japan, Sep. 7, 1978, 53-109910
Int. Cl.³ G03C *1/06, 5/24*
U.S. Cl. 430—434 **10 Claims**

1. A photographic material comprising a light-sensitive silver halide emulsion layer coated on a support which material contains a combination of a salt of tetrazolium containing only a non-metallic anion and a salt of tetrazolium containing a metallic anion, said metallic anion being a complex salt of an organic multivalent aminomultivalent carboxylic acid with a metal selected from the group consisting of iron, cobalt, nickel, copper, lead, chromium, titanium, cerium, samarium, europium and ytterbium, the valency of said metal ions being divalent for copper, trivalent for iron, cobalt, nickel, samarium, europium, chromium and ytterbium, and tetravlent for titanium, cerium, and lead in at least one of said silver halide emulsion layer or in a hydrophilic colloid layer adjacent to said silver halide emulsion layer.

4,318,980

HETEROGENEOUS SPECIFIC BINDING ASSAY EMPLOYING A CYCLING REACTANT AS LABEL

Robert C. Boguslaski, Elkhart; Robert J. Carrico, Bremen, both of Ind., and James E. Christner, Ann Arbor, Mich., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 894,838, Apr. 10, 1978, Pat. No. 4,230,797, which is a continuation of Ser. No. 667,982, Mar. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 572,008, Apr. 28, 1975, abandoned. This application Oct. 15, 1979, Ser. No. 84,866

The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

Int. Cl.[3] G01N *33/54*

U.S. Cl. 435—7 41 Claims

1. In a heterogeneous specific binding assay method for determining a ligand in a liquid medium, which method comprises the steps of:

(a) contacting said liquid medium with reagent means including a labeled conjugate comprising a specific binding substance coupled to a labeling substance, said reagent means and the ligand forming a binding reaction system producing

(1) a bound-phase of the labeled conjugate in which the specific binding substance therein is bound by a specific binding partner thereto and

(2) a free-phase of the labeled conjugate in which the specific binding substance therein is not bound by a specific binding partner thereto,

(b) separating said bound-phase and said free-phase; and

(c) determining said labeling substance in said bound-phase or said free-phase as a function of the amount of said ligand in said liquid medium;

the improvement wherein said labeling substance is a participant in a cyclic chemical reaction of the following type:

products A	cycled reactant (Form 1)	reactants B
reactants A	cycled reactant (form 2)	products B

wherein said labeling substance is a non catalytic material selected from the group consisting of reactants A, reactants B, and said cycled reactant.

14. In a reagent means for use in a heterogeneous specific binding assay method for determining a ligand in a liquid medium, which means includes (i) a labeled conjugate comprising a specific binding substance coupled to a labeling substance having a predetermined characteristic, which means and the ligand form a binding reaction system producing a bound-phase and a free-phase of the labeled conjugate, one of such phases being insoluble and the other being soluble, the amount of said predetermined characteristic of the labeling substance in said bound-phase or said free-phase being a function of the amount of the ligand present in the liquid medium under assay, and (ii) a specific binding partner of said ligand which binding partner is in a form which is insoluble in said liquid medium,

the improvement wherein said labeling substance is a participant in a cyclic chemical reaction of the following type:

products A	cycled reactant (form 1)	reactants B
reactants A	cycled reactant (form 2)	products B

wherein said labeling substance is a non catalytic material selected from the group consisting of reactants A, reactants B, and said cycled reactant, wherein the conjugate and the immobilized specific binding partner are present in amounts sufficient to determine said ligand.

4,318,981

HOMOGENEOUS SPECIFIC BINDING ASSAY EMPLOYING AN INTRAMOLECULARLY MODULATED PHOTOGENIC ENZYME SUBSTRATE LABEL

John F. Burd, and Thomas M. Li, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Apr. 24, 1980, Ser. No. 143,497

Int. Cl.[3] C12Q *1/66*

U.S. Cl. 435—7 40 Claims

1. In a homogeneous specific binding assay method for determining a ligand in, or the ligand binding capacity of, a liquid medium,

wherein a liquid reaction mixture is obtained by combining said liquid medium with reagent means including

(1) a labeled conjugate having a label component and a binding component, which conjugate is cleavable by an enzyme to produce an indicator product which emits light upon exposure to excitation means, and

(2) said enzyme which cleaves said labeled conjugate,

thereby forming in said reaction mixture a binding reaction system having a bound-species and a free-species of said labeled conjugate, the activity of said labeled conjugate as a substrate for said cleaving enzyme being substantially different in said bound-species compared to said free-species, and

wherein said reaction mixture is exposed to said excitation means and resulting light emitted is measured as a function of the amount of said ligand in, or said ligand binding capacity of, said liquid medium,

the improvement which comprises employing as said label component of said labeled conjugate, a residue having the formula:

P—X—M—R

wherein P is a photophore which emits light upon exposure to said excitation means, X is a linkage which is cleavable by said enzyme, M is a modulator for said light emission of said photophore, and R is a linking group through which said label component is covalently bound to the binding component in said conjugate, said labeled conjugate and said cleaved indicator product emitting substantially different amounts of light upon exposure to said excitation means due to modulation of the emission of P by the proximity of M in said labeled conjugate.

4,318,982

FMN-LABELED SPECIFIC BINDING ASSAY

William E. Hornby, Berkshire, and David L. Morris, Buckinghamshire, both of England, assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 45,423, Jun. 4, 1979, Pat. No. 4,238,565, which is a continuation-in-part of Ser. No. 917,961, Jun. 22, 1978, abandoned. This application Nov. 3, 1980, Ser. No. 203,524

The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.

Int. Cl.[3] G01N *33/54;* C12N *9/96*

U.S. Cl. 435—7 16 Claims

1. A homogeneous specific binding assay method for determining a ligand in a liquid medium, comprising the steps of:

forming a reaction mixture by contacting said liquid medium with

(a) reagent means including a labeled conjugate comprising, as label component, flavin mononucleotide coupled to a binding component, such contact producing a binding reaction system in which a bound-species and a free-species of said labeled conjugate are formed, the proportion of the flavin mononucleotide label compo-

nent in said two formed species being a function of the presence of said ligand in said liquid medium, and

(b) an apoenzyme selected from the group consisting of apocytochrome reductase, apoNADPH:oxidoreductase and apopyridoxine phosphate oxidase, the ability of the flavin mononucleotide label component to combine with the apoenzyme to produce a holoenzyme being different in activity in said two formed species, and

determining the proportion of the flavin mononucleotide label component in said two formed species by measuring holoenzyme activity in said reaction mixture.

6. A homogeneous specific binding assay method for determining a ligand in a liquid medium, comprising the steps of:

forming a reaction mixture by combining said liquid medium with reagent means including (1) a labeled conjugate comprising, as label component, flavin mononucleotide coupled to said ligand or a binding analog thereof, (2) a specific binding partner of said ligand, and (3) an apoenzyme selected from the group consisting of apocytochrome reductase, apoNADPH:oxidoreductase, and apopyridoxine phosphate oxidase, wherein the binding by said binding partner of said ligand or analog thereof in said labeled conjugate inhibits the ability of the flavin mononucleotide label component to combine with the apoenzyme to produce a holoenzyme; and measuring the resulting holoenzyme activity in said reaction mixture.

11. In a reagent means for determining a ligand in a liquid medium,

which means comprises the reagents of a binding reaction system, including a conjugate having a label component and a binding component, in which reaction system upon contact with said liquid medium are formed a bound-species and a free-species of said labeled conjugate, the proportion of said label component in said two formed species being a function of the presence of said ligand in said liquid medium,

the improvement wherein said label component comprises flavin mononucleotide and said means includes an apoenzyme selected from the group consisting of apocytochrome reductase, apoNADPH:oxidoreductase, and apopyridoxine phosphate oxidase, which combines with the flavin mononucleotide label component to produce a holoenzyme.

14. A test kit for determining a ligand in a liquid medium, comprising,

(1) a labeled conjugate comprising, as label component, flavin mononucleotide coupled to said ligand or a binding analog thereof,

(2) a specific binding partner of said ligand, and

(3) an apoenzyme selected from the group consisting of apocytochrome reductase, apoNADPH:oxidoreductase, and apopyridoxine phosphate oxidase, which combines with the flavin mononucleotide label component to produce a holoenzyme wherein the binding partner, the conjugate, and the apoenzyme are present in amounts sufficient to detect the ligand.

4,318,983

FAD-LABELED SPECIFIC BINDING ASSAY MONITORED WITH APOGLUTATHIONE REDUCTASE OR APOLIPOAMIDE DEHYDROGENASE

William E. Hornby, Bray, and David L. Morris, Stoke Poges, both of England, assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 45,423, Jun. 4, 1979, Pat. No. 4,238,565, which is a continuation-in-part of Ser. No. 917,961, Jun. 22, 1978, abandoned. This application Nov. 3, 1980, Ser. No. 203,525

The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.

Int. Cl.³ G01N *33/54*; C12N *9/96*

U.S. Cl. 435—7 **16 Claims**

1. A homogeneous specific binding assay method for determining a ligand in a liquid medium, comprising the steps of:

forming a reaction mixture by contacting said liquid medium with

(a) reagent means including a labeled conjugate comprising, as label component, flavin adenine dinucleotide coupled to a binding component, such contact producing a binding reaction system in which a bound-species and a free-species of said labeled conjugate are formed, the proportion of the flavin adenine dinucleotide label component in said two formed species being a function of the presence of said ligand in said liquid medium, and

(b) an apoenzyme selected from apoglutathione reductase and apolipoamide dehydrogenase, the ability of the flavin adenine dinucleotide label component to combine with the apoenzyme to produce a holoenzyme being different in activity in said two formed species, and

determining the proportion of the flavin adenine dinucleotide label component in said two formed species by measuring holoenzyme activity in said reaction mixture.

6. A homogeneous specific binding assay method for determining a ligand in a liquid medium, comprising the steps of:

forming a reaction mixture by combining said liquid medium with reagent means including (1) a labeled conjugate comprising, as label component, flavin adenine dinucleotide coupled to said ligand or a binding analog thereof, (2) a specific binding partner of said ligand, and (3) an apoenzyme selected from apoglutathione reductase and apolipoamide dehydrogenase, wherein the binding by said binding partner of said ligand or analog thereof in said labeled conjugate inhibits the ability of the flavin adenine dinucleotide label coponent to combine with the apoenzyme to produce a holoenzyme; and measuring the resulting holoenzyme activity in said reaction mixture.

11. In a reagent means for determining a ligand in a liquid medium,

which means includes a conjugate having a label component and a binding component,

the improvement wherein said label component comprises flavin adenine dinucleotide and said means includes an apoenzyme selected from apoglutathione reductase and apolipoamide dehydrogenase, which combines with the flavin adenine dinucleotide label component to produce a holoenzyme.

14. A test kit for determining a ligand in a liquid medium, comprising,

(1) a labeled conjugate comprising, as label component, flavin adenine dinucleotide coupled to said ligand or a binding analog thereof,

(2) a specific binding partner of said ligand, and

(3) an apoenzyme selected from apoglutathione reductase and apolipoamide dehydrogenase, which combines with the flavin adenine dinucleotide label component to produce a holoenzyme wherein the conjugate, the partner and the apoenzyme are present in relative amounts which are sufficient for the determination of the ligand.

4,318,984

STABILIZED COMPOSITION, TEST DEVICE, AND METHOD FOR DETECTING THE PRESENCE OF A SUGAR IN A TEST SAMPLE

Thomas A. Magers, South Bend, and David L. Tabb, Elkhart, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

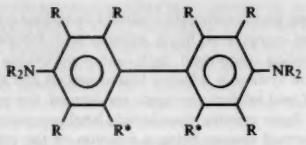
Filed Nov. 13, 1979, Ser. No. 93,605

The portion of the term of this patent subsequent to Jul. 21, 1998, has been disclaimed.

Int. Cl.³ C12Q *1/54*

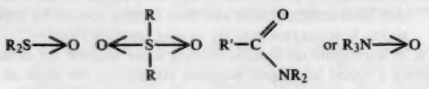
U.S. Cl. 435—14 **30 Claims**

1. In a composition for detecting the presence of a sugar in a test sample, wherein said composition comprises a peroxidase, a sugar oxidase and a chromogen compound having the structure



in which R and R*, same or different, are H, lower alkyl, lower alkyloxy, aryl, or aryloxy, or in which the substituents R* together comprise $-(CH_2)-_n$ in which n is 1 or 2;

the improvement wherein said composition further comprises an enhancer compound having the structure



in which the R substituents, same or different, are as described above; or in which two of said R substituents bound to a common atom together form a closed ring having 3 to about 6 atoms, said ring being saturated, unsaturated, or aromatic; and in which R' is hydrogen or an alkyl or alkenyl group having 1 to about 20 carbon atoms.

4,318,985

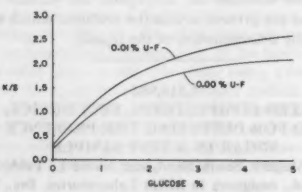
METHOD AND DEVICE FOR DETECTING GLUCOSE CONCENTRATION

Robert Bauer, Bristol, and Myron C. Rapkin, Elkhart, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jan. 29, 1981, Ser. No. 229,733

Int. Cl.³ G01N *33/52, 33/66*

U.S. Cl. 435—14 **10 Claims**



THE INFLUENCE OF UREA-FORMALDEHYDE (U-F) ON QUANTITATION OBTAINED WITH WHATMAN 3 MM PAPER

1. In a test device for detecting the presence of glucose in a test sample, wherein said device comprises a carrier matrix incorporated with glucose oxidase, a peroxidatively-active compound and a chromogen, the improvement wherein the carrier matrix is incorporated with from 0.005 percent to 2.5 percent by weight urea-formaldehyde resin wherein there is formed a cross-linked polymer.

4,318,986

ENZYME ASSAYS

Anthony C. Richardson, Henley-on-Thames; Perry F. G. Praill, Uxbridge, and Robert G. Price, Northwood, all of England, assignors to National Research Development Corporation, London, England

PCT No. PCT/GB78/00033, § 371 Date Jun. 29, 1979, § 102(e) Date Jun. 29, 1979, PCT Pub. No. WO79/00255, PCT Pub. Date May 17, 1979

PCT Filed Oct. 31, 1978, Ser. No. 127,242

Claims priority, application United Kingdom, Nov. 1, 1977, 45390/77

Int. Cl.³ C12Q *1/34*

U.S. Cl. 435—18 **22 Claims**

1. An enzyme substrate of formula S'—X—A—Y—NO_2, wherein A represents an aromatic nucleus, X represents an auxochromic radical, Y represents an unsaturated group which is capable of transmitting electron resonance between the aromatic nucleus A and the nitro (NO_2) substituent, and S' is selected from the group consisting of propionyloxy, palmitoyloxy, phosphate, diphosphate, sulfate, and glycosyl residue.

4,318,987

β-CAROTENE PRODUCING STRAINS OF THE FUNGUS PHYCOMYCES BLAKESLEENUS

Francisco J. Murillo Araujo, C/Turdetania, 3-1°C; Isabel Lopez Calderon, C/Virgen de la Antigua, 20, 1°A; Isabel Lopez Diaz, C/Gerona, 21, 3°A, and Enrique Cerda Olmedo, C/Avd. Reina Mercedes, 27, 6°D, all of Sevilla, Spain

Filed Nov. 16, 1979, Ser. No. 94,923

Int. Cl.³ C12N *15/00;* C12P *23/00;* C12N *1/14;* C12R *1/645*

U.S. Cl. 435—172 **2 Claims**

1. A biologically pure strain of *Phycomyces blakesleeanus* capable of producing β-carotene selected from the group consisting of:

S218 * S219,
S242 * S243,
S244 * S245, and
S246 * S247

said strains having been deposited in the Public Depository and Strain Collection of the Faculty of Biology in the University of Sevilla, Sevilla, Spain.

4,318,988

PROCESS FOR BIOLOGICAL DENITRIFICATION OF EFFLUENTS

Bruno Cabane, St. Cloud, and Joel Vergnault, Argenteuil, both of France, assignors to PCUK Produits Chimiques Ugine Kuhlmann, Paris, France

Division of Ser. No. 922,343, Jul. 6, 1978, Pat. No. 4,209,390. This application Dec. 21, 1979, Ser. No. 106,037

Claims priority, application France, Jul. 8, 1977, 77 21119

Int. Cl.³ C12N *11/14*

U.S. Cl. 435—176 **1 Claim**

1. An active denitrifying support for use in the biological denitrification of effluents containing up to 10 g/l of nitric nitrogen comprising an active denitrifying composition of strains of enriched denitrifying bacteria selectively cultured to the particular nitric nitrogen-containing effluent to be purified and very fine calcium carbonate grains, produced by the process of mixing said selected strains of enriched denitrifying bacteria with organic carbon and calcium nitrate in an anaerobic environment wherein a central inactive carbonaceous nucleus is obtained by the process of adding an unassimilable carbonaceous material to the denitrification medium comprised of selected denitrifying bacteria and calcium nitrate.

4,318,989

STARCH-DEGRADING ENZYMES FROM *CLADOSPORIUM RESINAE*

James J. Marshall, Miami, Fla., assignor to Lifeline Products, Inc., Plainfield, N.J.

Division of Ser. No. 46,482, Jun. 7, 1979, Pat. No. 4,234,686, which is a continuation-in-part of Ser. No. 892,747, Apr. 3, 1978, Pat. No. 4,211,842. This application Jun. 16, 1980, Ser. No. 159,949

Int. Cl.[3] C12N *9/34*

U.S. Cl. 435—205 2 Claims

1. A method of preparing glucoamylase S which comprises culturing *Cladosporium resinae* (ATCC No. 20495) in a growth medium containing an assimilable carbon source and other nutrients, recovering a mixture of starch-degrading enzymes from the resulting culture medium and separating glucoamylase S from the resulting recovered starch-degrading enzyme mixture.

4,318,990

SEPARATION OF PROTEASES FROM FLUIDS

Alan R. Thomson, Abingdon; Brynley J. Miles, Cirencester; John C. Caygill, Finchley, and David J. Moore, Shirley, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 40,124, May 18, 1979, abandoned. This application May 15, 1980, Ser. No. 149,900

Claims priority, application United Kingdom, May 26, 1978, 23669/78

Int. Cl.[3] C12N *9/50, 11/14*

U.S. Cl. 435—219 3 Claims

1. A process for the separation of stem or fruit bromelain from a fluid which comprises contacting the fluid with porous titania particles capable of sorbing the bromelain, said porous titania particles having an interconnected porosity throughout which provides an extended surface area and a pore structure such as will allow the bromelain to permeate the particles and be sorbed, thereby to separate the bromelain from the fluid, and recovering the sorbed bromelain from the porous titania particles by elution with depleted pineapple juice from which bromelain has already been removed, said porous titania particles having been prepared by the steps of mixing finely divided titania, capable of sorbing the bromelain from the fluid, with a solid fugitive additive to form a mixture, including in the mixture a solvent to dissolve the fugitive additive, said titania being substantially insoluble in said solvent, forming discrete particles from the mixture, and heating the particles to remove the solvent and fugitive additive to produce discrete particles of titania having an interconnected pore structure throughout said discrete particles providing an extended surface area, the pore size being such as will allow said bromelain in said fluid to permeate the particles and be sorbed, said titania being substantially unaffected by said heating utilized to effect removal of said solvent and fugitive additive.

4,318,991

BAKER'S YEAST WITH IMPROVED LEAVENING POWER IN ACID DOUGH

Frank Hill, Dusseldorf, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Mar. 7, 1979, Ser. No. 18,307

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2810601

Int. Cl.[3] C12N *1/36, 1/18*

U.S. Cl. 435—245 5 Claims

1. A process for the production of baker's yeast with improved activity or leavening power under acid leavening conditions, comprising cultivating fresh baker's yeast through a plurality of propagation stages, and in only the last propagation stage, propagating the fresh baker's yeast in the presence of from 0.1 gm to 10 gm per liter of culture broth containing a source of carbon and nitrogen, of an aliphatic carboxylic acid having from 2 to 4 carbon atoms selected from the group consisting of alkanoic acids, hydroxyalkanoic acids and hydroxyalkanedioic acids, and recovering baker's yeast having said improved activity or leavening power.

4,318,992

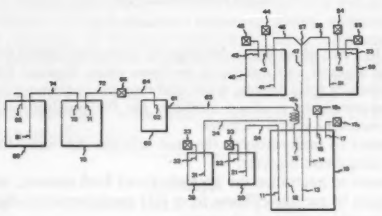
FERMENTER

Yolanda M. Mila-de-la-Roca; Beltran V. Azuaje, and Omar R. Gil, all of Caracas, Venezuela, assignors to Instituto Nacional de Higiene Rafael Rangel, Caracas, Venezuela

Filed May 30, 1980, Ser. No. 154,961

Int. Cl.[3] C12M *1/34*

U.S. Cl. 435—291 3 Claims



1. A fermentation apparatus comprising:

a fermentation container formed with a closure at the top thereof and adapted to receive a culture medium;

a first tube extending through said closure into said container and terminating at an upper portion of said container while being connected to a condenser coil for condensing water vapor formed in said container and returning the condensed water vapor thereto;

a decontamination and venting system connected to said coil and including a vessel containing a caustic solution and at least one further vessel disposed between the caustic solution vessel having tubes opening into the top thereof and respectively communicating with said coil and with said caustic solution vessel below the level of the caustic solution therein;

temperature monitoring means extending through said closure into said vessel;

a second tube extending through said closure into said vessel, provided with an air filter and connectable to a source of fluid pressure operable to draw material into said container or drive material from said container;

a third tube extending through said closure into said container and extending substantially to the bottom thereof;

a harvesting system including a pair of vessels connected to said third tube for receiving material displaced by fluid pressure through said third tube;

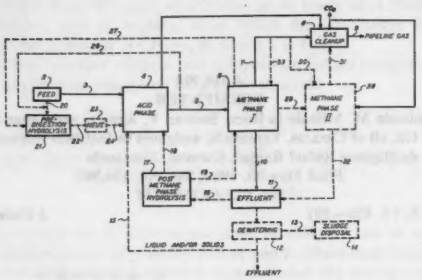
a fourth tube extending through said closure into said container substantially to the bottom thereof and connected to a sampling vessel; and

a fifth tube extending through said closure substantially to the bottom of said container and connected to a seeding vessel adapted to receive an inoculum for said medium and enable said inoculum to be transferred to said container through said fifth tube, said harvesting, sampling and seeding vessels each being provided with air filters adapted to be connected to said source.

4,318,993
TWO PHASE ANAEROBIC DIGESTER SYSTEM

Sambhunath Ghosh, Chicago, and Donald L. Klass, Barrington, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Division of Ser. No. 530,760, Dec. 9, 1974, Pat. No. 4,022,665. This application May 4, 1977, Ser. No. 793,519
Int. Cl.³ C02F 3/28
U.S. Cl. 435—299 **4 Claims**



1. In a two phase anaerobic digester system including an acid phase digester and a separate methane phase digester for the digestion of solid organic waste and biomass containing insoluble materials to produce methane gas for pipeline use, the improvement which includes

means to prehydrolyze the feed mixture delivered to said acid phase digester,

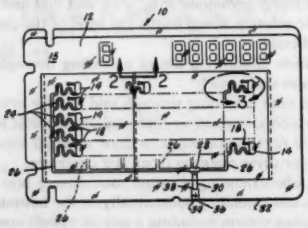
means to neutralize the prehydrolysed feed mixture, and

means to recycle effluent from said methane phase digester to said prehydrolysis means.

4,318,994
ENTEROBACTERIACEAE SPECIES BIOCHEMICAL TEST CARD

Michael C. Meyer, Hazelwood; Leodis V. Woods, St. Louis; James J. Underwood, Ballwin; Ralph Wilkinson, Florissant, all of Mo., and Victoria Stratman, Galesburg, Ill., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Continuation of Ser. No. 70,964, Aug. 30, 1979, abandoned. This application Feb. 26, 1981, Ser. No. 238,682
Int. Cl.³ C12M 1/20, 1/34
U.S. Cl. 435—301 **13 Claims**



1. A card for use in detecting the presence of microorganisms in a specimen wherein the card has:

first and second sides;

detection wells for containing microbe supportive media passing from said first side to said second side therethrough;

filling port means therein;

filler passageways formed in said first side of said card connecting said filling port means to said detection wells;

first and second layers of transparent adhesive tape positioned on said first and second sides of said card respectively to cover said detection wells and filler passageways, said transparent adhesive tape of said first and second layers having a predetermined gas permeability; and

third and fourth layers of transparent adhesive tape positioned on portions of said first and second sides of said card to doubly cover selected wells to change the accessibility thereof to flow thereinto from the outside atmosphere, said transparent adhesive tape of said third and fourth layers having predetermined gas permeabilities.

4,318,995
METHOD OF PREPARING LIGHTLY DOPED CERAMIC MATERIALS

Warren W. Rhodes, Raritan, and Man F. Yan, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 25, 1980, Ser. No. 144,172
Int. Cl.³ C04B 35/00, 35/44, 35/46
U.S. Cl. 501—1 **13 Claims**

1. A method of preparing ceramic material selected from the group consisting of TiO_2, ZnO, Al_2O_3 and $BaTiO_3$ having at least one additive selected from the group consisting of the elements of Group IIA of the Periodic Table and at least one additive selected from the group consisting of the elements of Group VB of the Periodic Table comprising the steps of forming a slurry of said ceramic material, said slurry further comprising a dispersant said slurry having said at least one Group IIA additive and said Group VB additive in solution;

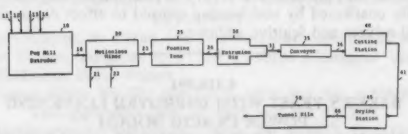
precipitating said additives;

spray drying said slurry and precipitated additives.

4,318,996
LIGHTWEIGHT CERAMIC COMPOSITION

Jules Magder, Princeton, N.J., assignor to Princeton Organics Incorporated, Princeton, N.J.

Filed Apr. 21, 1980, Ser. No. 142,114
Int. Cl.³ C04B 21/00, 21/02
U.S. Cl. 501—84 **15 Claims**



1. A cellular clay body adapted for conversion into a fired lightweight ceramic composition, wherein said clay body is produced by a process which comprises (1) providing a deformable plastic mass having a viscosity of at least about 500 poises, by the uniform blending of an admixture comprising clay, water, gas generating agent, and foam stabilizing agent; (2) allowing between about 0.01–5 seconds for pore formation in the blended plastic mass; and (3) shaping and sizing the resultant lightweight plastic mass by extrusion into a self-supporting matrix; wherein the admixture in process step (1) on a weight basis comprises about 100 parts of clay, 8–75 parts of water, 0.2–30 parts of foam stabilizing agent, and a sufficient quantity of a gas generating agent to provide porosity.

4,318,997

PROCESS AND APPARATUS FOR MULTI-STAGE CATALYTIC METHANIZATION OF GASES

Claus Flockenhaus, and Erich Hackler, Essen-Kettwig, both of Fed. Rep. of Germany, assignors to Thyssengas GmbH, Duisburg-Hamborn and Didier Engineering GmbH, Essen, both of, Fed. Rep. of Germany

Continuation of Ser. No. 946,170, Sep. 27, 1978, abandoned. This application May 9, 1980, Ser. No. 148,150

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1977, 2747517

Int. Cl.[3] C07C *1/04*

U.S. Cl. 518—704 6 Claims

1. A process for the isothermal multi-stage catalytic methanisation of a carbon-monoxide-containing and hydrogen-containing feed gas comprising the successive steps of

(a) isothermally reacting the feed gas in a fluidized bed to form a premethanised gas at a temperature of from 400° to 500° C.;

(b) subjecting the premethanised gas to a shift conversion under isothermal conditions, in a fluidized bed at about the same temperature; and

(c) methanising the converted gas in a fluidized bed under isothermal conditions, at a temperature of from 300° to 380° wherein the stoichiometric ratio of carbon monoxide to hydrogen in the converted gas is obtained by adding the premethanised gas thereto.

4,318,998

CELLULAR PLASTIC ADDITIVE

Jan-Olof V. Berglund, Lomma, Sweden, assignor to Jan Berglund Produktions AB, Lomma, Sweden

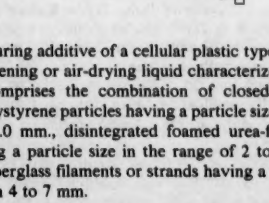
PCT No. PCT/SE80/00167, § 371 Date Feb. 18, 1981, § 102(e) Date Feb. 18, 1981, PCT Pub. No. WO80/02845, PCT Pub. Date Dec. 24, 1980

PCT Filed Jun. 12, 1980, Ser. No. 237,141

Claims priority, application Sweden, Jun. 19, 1979, 7905380

Int. Cl.[3] C08J *9/22*

U.S. Cl. 521—54 6 Claims



1. A texturing additive of a cellular plastic type to be mixed with a hardening or air-drying liquid characterized in that the additive comprises the combination of closed cellular expanded polystyrene particles having a particle size in the range of 0.2 to 3.0 mm., disintegrated foamed urea-formaldehyde resin having a particle size in the range of 2 to 10 mm. and chopped fiberglass filaments or strands having a length which ranges from 4 to 7 mm.

4,318,999

LOW FIRE HAZARD RIGID URETHANE INSULATION FOAM, POLYOL MIXTURES USED IN THE MANUFACTURE THEREOF, AND METHOD FOR MANUFACTURE THEREOF

William R. Dunlop, Rolling Meadows, and William J. Pentz, Cary, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Nov. 13, 1980, Ser. No. 206,419

Int. Cl.[3] C08G *18/14, 18/18, 18/32*

U.S. Cl. 521—171 4 Claims

1. In a method for manufacturing rigid polyurethane foam, which method includes co-reacting a polyhydroxy composition with an organic polyisocyanate composition, in the presence of a blowing agent, a foam cell stabilizer, and a catalyst consisting of an urethane-specific catalyst, and in which the polyhydroxy composition includes a base portion thereof consisting essentially of halogenated polyhydroxyl compounds, the improvement comprising:

adding to the polyhydroxyl composition a 2,5-bis-(hydroxymethyl) furan component in an amount sufficient to provide between approximately 12 and 35 weight percent of the polyhydroxyl composition.

3. A stable, liquid polyhydroxyl composition for use in the manufacture of rigid urethane insulating foams, comprising 12–24 percent 2,5-bis-(hydroxymethyl) furan component, 76–88 percent halogenated polyol base polyhydroxyl component, as well as 25–40 PHR (parts per hundred polyol compounds) of blowing agent, 1.5–2 PHR surfactant, and 2–7 PHR of an acid scavenger, and a catalyst consisting of 0.8–1.0 PHR urethane specific catalyst.

4,319,000

CLOSED CELL POLYIMIDES

John Gagliani, San Diego, and John V. Long, El Cajon, both of Calif., assignors to International Harvester Company, Chicago, Ill.

Continuation-in-part of Ser. No. 856,970, Dec. 2, 1977, abandoned, which is a division of Ser. No. 581,136, May 27, 1975, Pat. No. 4,070,312. This application Mar. 30, 1981, Ser. No. 248,893

Int. Cl.[3] C08G *12/12;* C08V *9/00*

U.S. Cl. 521—189 16 Claims

1. A strong, thermally stable polyimide which has a low density and low absorption characteristics and is derived from an at least primarily open cell copolyimide which is the reaction product of at least one 3,3',4,4'-benzophenonetetracarboxylic acid diester and a mixture of primary diamines; said diamines being aromatic, para- or meta-substituted, and free of aliphatic moieties or heterocyclic; and said polyimide having a porous, closed cell structure which has not less than about 95 percent closed cells.

4,319,001

TERNARY THERMOPLASTIC MOLDING COMPOSITION CONTAINING ETHYLENE-PROPYLENE COPOLYMER

Paul Spielau, Troisdorf-Eschmar; Werner Kühnel, Neunkirchen-Schöneshof; Dietmar Welsch, Weissenburg; Gerd Klingberg, Lohmar; Hans E. Konermann, and Wilfried Leeder, both of Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,479

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012763

Int. Cl.[3] C08L *23/16, 51/06*

U.S. Cl. 525—70 8 Claims

1. Ternary molding composition formed of an admixture of a modified ethylene-propylene copolymer, a propylene polymer and polyethylene, which comprises:

(a) 35–50% by weight of a modified ethylene-propylene copolymer prepared by the polymerization of the ethy-

lene-propylene copolymer proportion onto polyethylene, with an ethylene content of the ethylene-propylene copolymer proportion having at least 65% by weight, a melt index MFI (230/5) of 0.8–2.0 g/10 min,

and

(b) 30–60% by weight of polypropylene with a melt index MFI (230/5) of 25–65 g/10 min and/or propylene-ethylene copolymer with a melt index MFI (230/5) of 15–50 g/10 min, and

(c) 3–30% by weight of polyethylene, wherein the polyethylene block of the modified ethylene-propylene copolymer (a) is attributable to the quantity of polyethylene contained in said composition.

4,319,002

VINYL HALIDE POLYMER BLENDS OF ENHANCED IMPACT RESISTANCE

Gilbert Witschard, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation of Ser. No. 881,949, Feb. 28, 1978, abandoned. This application Jul. 28, 1980, Ser. No. 172,929

Int. Cl.[3] **C08L** *51/00, 53/00*

U.S. Cl. 525—71 **15 Claims**

1. In a vinyl halide polymer composition which is capable of being molded to an impact resistant, substantially transparent or translucent article and which comprises a blend of a vinyl halide polymer wherein the major proportion of the monomer units are vinyl halide monomer residues and a polymeric impact modifier for polyvinyl halide wherein the monomer units consist essentially of methyl methacrylate, 1,3-butadiene and styrene residues and which has about the same refractive index as said vinyl halide polymer, the improvement wherein the blend also comprises a block thermoplastic elastomer wherein the major porportion of the monomer units are residues of a mono-alkenyl-substituted aromatic compound of the benzene or naphthalene series of 8 to 20 carbon atoms and a conjugated alkadiene hydrocarbon of 4 to 10 carbon atoms, said block elastomer being normally incompatible with said vinyl halide polymer, said vinyl halide polymer being present in a major proportion in said blend, and said polymeric impact modifier and said block elastomer together being present in a minor proportion in said blend with the weight ratio of said block elastomer to said methacrylate modifier being about 5:1 to about 1:5.

4,319,003

POLY(METHYL METHACRYLATE) POLYCARBONATE BLOCK COPOLYMERS

Zachariah G. Gardlund, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 26, 1980, Ser. No. 191,283

Int. Cl.[3] **C08G** *81/02*

U.S. Cl. 525—148 **5 Claims**

1. An impact resistant, moldable, transparent, thermoplastic block copolymer of the ABA type wherein the A segments are poly(methyl methacrylate) having a number average molecular weight (Mn) in the range of from about 500 to 35,000 and the B segment is polycarbonate having a number average molecular weight (Mn) in the range of from about 500 to 30,000 said block copolymer having a number average molecular weight (Mn) in the range of from about 15,000 to 100,000.

4,319,004

TERNARY THERMOPLASTIC MOLDING COMPOSITION CONTAINING POLYPROPYLENE HOMOPOLYMER

Paul Spielau, Troisdorf-Eschmar; Werner Kühnel, Nunkirchen-Schoneshof; Dietmar Welsch, Weissenburg; Gerd Klingberg, Lohmar; Hans E. Konermann, and Wilfried Leeder, both of Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,467

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012805

Int. Cl.[3] **C08L** *23/00, 23/16, 23/12, 23/06*

U.S. Cl. 525—211 **10 Claims**

1. A ternary molding composition formed from an admixture of ethylene-propylene copolymer, polypropylene homopolymer, and polyethylene, which comprises:

(a) 38–48% by weight of a partially crystalline ethylene-propylene copolymer with an ethylene content of at least 65% by weight, a melt index MFI (230/5) of 0.7–2.0 g/10 min, and a tensile strength of higher than 5.0 N/mm^2,

(b) 27–62% by weight of polypropylene homopolymer with a melt index MFI (230/5) of 25–65 g/10 Min, and

(c) 3–30% by weight of polyethylene with a melt index MFI (230/5) of 15–20 g/10 min, the molding composition having a melt index MFI (230/5) of at least 8 g/10 min, a tensile strength of at least 15 N/mm^2 and an elongation at yield of at least 450%.

4,319,005

TERNARY THERMOPLASTIC MOLDING COMPOSITION CONTAINING POLYPROPYLENE COPOLYMERS

Paul Spielau, Troisdorf-Eschmar; Werner Kühnel, Neunkirchen-Schöneshof; Dietmar Welsch, Weissenburg; Gerd Klingberg, Lohmar; Hans E. Konermann, and Wilfried Leeder, both of Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,466

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012804

Int. Cl.[3] **C08L** *23/16*

U.S. Cl. 525—240 **10 Claims**

1. A ternary molding composition formed of an admixture of ethylene-propylene copolymer, propylene polymer, and polyethylene which comprises:

(a) 30–45% by weight of a partially crystalline ethylene-propylene copolymer with an ethylene content of at least 65% by weight; a melt index MFI (230/5) of 0.7–2.0 g/10 min, and a tensile strength higher than 5.0 N/mm^2;

(b) 35–65% by weight of propylene polymer with a melt index MFI (230/5) of 15–50 g/10 min, and

(c) 3–30% by weight of polyethylene with a melt index MFI (230/5) of 15–50 g/10 min, said molding composition having a melt index MFI (230/5) of at least 8 g/10 min and a tensile strength of at least 15 N/mm^2 and an elongation at yield of at least 450%.

4,319,006

POLYAMIDEIMIDE-ESTERIMIDE HEAT RESISTANT RESIN AND ELECTRIC INSULATING VARNISH

Shigeru Yamada, Tokyo, and Tadao Ikeda, Kawaguchi, both of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co. Ltd., Nihonbashi and Ukima Colour & Chemicals Mfg. Co. Ltd., Tokyo, both of, Japan

Filed Nov. 25, 1980, Ser. No. 210,350

Claims priority, application Japan, Jan. 31, 1980, 55/9322

Int. Cl.[3] **C08L** *79/08, 75/06*

U.S. Cl. 525—424 **12 Claims**

1. A polyamideimide-esterimide heat resistant resin prepared by condensing by esterification an aromatic polyamideimide containing amide groups and imide groups in the main chain

thereof and a polyesterimide containing ester groups and imide groups in the main chain thereof.

4,319,007

HIGH MELT STRENGTH POLYCAPROLACTAM COMPOSITIONS

Ghazi M. A. Khattab, Succasunna, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Mar. 10, 1980, Ser. No. 128,438

Int. Cl.³ C08G *69/48*

U.S. Cl. 525—431 **8 Claims**

1. A composition possessing sufficient melt strength for the blow-molding of shaped articles comprising the reaction product between polycaprolactam, having a melt index of at least about 3 grams/10 minutes, aminoalkyltrialkoxysilane and a catalytic amount of water, said reaction product being substantially free of trialkoxysilane groups and said composition possessing a melt index of below about 2.25 g/10 min.

4,319,008

POLYETHER ADMIXTURE AND SEMI-PERMEABLE MEMBRANES COMPRISED THEREOF

Xavier Marze, Lyons, and Michel Minfray, Oullins, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed May 3, 1979, Ser. No. 35,480

Claims priority, application France, May 3, 1978, 78 13777

Int. Cl.³ C08L *71/00, 81/06*

U.S. Cl. 525—523 **29 Claims**

1. A semi-permeable membrane comprising a composition of matter comprising an admixture of at least one polyether consisting essentially of recurring units of the structural formula:

$$—O—Ar—O—CH_2—CHOH—CH_2— \quad (I)$$

and at least one polyether consisting essentially of recurring units of the structural formula:

$$—O—E—R—E']_m—O—G—SO_2—G'— \quad (II)$$

in which formulae Ar is a divalent aromatic radical in which the free valencies are borne by nuclear carbons; m is a lower integer; E, E', G and G' are divalent aromatic radicals, and R is a valence bond or a radical selected from the group consisting of —CO—, —O—, $—SO_2—$ and divalent hydrocarbon radicals.

4,319,009

CYCLOALIPHATIC ACRYLATE COMPOSITIONS

Hans R. Friedli; Donald L. Nelson, and John L. Massingill, Jr., all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 866,679, Jan. 3, 1978, abandoned. This application Oct. 13, 1978, Ser. No. 951,416

Int. Cl.³ C08F *2/00, 236/00*

U.S. Cl. 526—62 **14 Claims**

1. A cycloaliphatic acrylate composition comprising

(A) about 60 to 95 percent by weight of dicyclopentadiene acrylate, methacrylate, or mixtures thereof

(B) about 2 to 15 percent by weight of a mixture of polycyclopentadienyl acrylates of the formula

where

R is $CH_2=CZ—C(O)—O—$

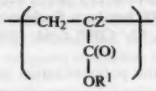
Z is H, or methyl

n is 1, or 2

m is 0 or 1 and when m is 0 there is a double bond present

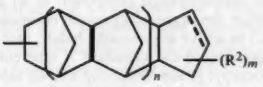
(C) about 1 to about 21 percent by weight of a mixture of the copolymers of methacrylic acid or acrylic acid with adducts of cyclopentadiene with isoprene, piperylene, methylcyclopentadiene or mixtures thereof,

(D) about 0.05 to about 10 percent by weight of a mixture of poly acrylates having the repeating unit



where

R^1 is hydrogen or



R^2 is $CH_2=CZ—C(O)—O—$

Z is H or methyl

n is 0, 1 or 2, and

m is 0 or 1 and when m is 0 there is a double bond present.

4,319,010

PROCESS FOR THE POLYMERIZATION OF ALKENES

Cornelis E. P. V. van den Berg, Geleen, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Continuation of Ser. No. 501,616, Aug. 29, 1974, abandoned, which is a continuation of Ser. No. 203,429, Nov. 30, 1971, abandoned. This application Oct. 26, 1976, Ser. No. 735,440

Claims priority, application Netherlands, Dec. 2, 1970, 7017569

Int. Cl.³ C08F *4/02, 4/64, 10/02*

U.S. Cl. 526—124 **6 Claims**

1. In a process for the solution polymerization of ethylene or mixtures of ethylene with at most 20 mole percent of at least one other olefinic monomer in an inert liquid organic solvent at temperatures above 110° C., said polymerization being in the presence of a catalyst obtained by mixing a transition metal compound with a reducing organo-metal compound, the improvement comprising conducting said polymerization in the presence of a catalyst dissolved in said inert liquid organic solvent and consisting essentially of the product obtained by mixing,

(a) at least one tetravalent, titanium compound, said compound being a halide, an alkoxide, or mixture thereof;

(c) $MgCl_2$ which is rendered soluble in said inert liquid solvent by admixture with aluminum alkyl sesquichloride, monoalkyl aluminum chloride, or trialkyl aluminum,

(c) an organo-aluminum halide of the general formula $AlR_{3-z}X_z$, wherein R is selected from the group consisting of alkyl, alkenyl, cycloalkyl, alkaryl, aryl, and aralkyl of up to 30 carbon atoms, X is halogen, and Z is a number at least equal to 1 but less than 3, wherein the molar ratio between said $MgCl_2$, and said organo-aluminum halide (c) is between 0.01 and 1.5, the ratio between said organo-aluminum halide (c) and said titanium compound is between 8 and 2000, and the concentration of said titanium compounds in the said organic solvent during said polymerization is between 0.0005 and 0.2 mmole per liter.

4,319,011

HIGH EFFICIENCY, HIGH TEMPERATURE CATALYST FOR POLYMERIZING OLEFINS

Kirby Lowery, Jr.; George W. Knight, and James A. May, Jr., all of Lake Jackson, Tex., assignors to The Dow Chemical Co., Midland, Mich.

Continuation of Ser. No. 765,182, Feb. 3, 1977, Pat. No. 4,250,288, which is a continuation-in-part of Ser. No. 581,294, May 27, 1975, abandoned. This application Sep. 16, 1980, Ser. No. 187,659

The portion of the term of this patent subsequent to Feb. 10, 1998, has been disclaimed.

Int. Cl.[3] C08F *4/64, 10/02*

U.S. Cl. 526—137 9 Claims

1. A process for the polymerization of an α-olefin under conditions characteristic of Ziegler polymerization in the presence of a catalytic amount of a catalytic reaction product of (A) compound of a transition metal (TM), (B) an organomagnesium component selected from (1) an organomagnesium compound or (2) a complex of an organomagnesium compound and an organometallic compound in an amount sufficient to solubilize the organomagnesium compound in hydrocarbon and (C) an active non-metallic halide, said non-metallic halide corresponding to the formula R'X wherein R' is hydrogen or a hydrocarbyl group containing a labile halogen atom as easily lost to another compound as the chloride atom of sec-butyl chloride and X is halogen; said reaction product being produced in a manner such that the organomagnesium component reacts with the non-metallic halide to form a hydrocarbon insoluble portion, and further provided that sufficient aluminum, in the form of a hydrocarbyl-aluminum compound represented by the formula $R_{3-a}AlX_a$ wherein R is hydrocarbyl, X is halide and a is a number from 0 to 1.5, is present in the catalytic reaction product in an amount sufficient to provide a reaction product that is catalytic for the polymerization of an α-olefin; the proportions of the foregoing components of said catalytic reaction product being such that the atomic ratio of Mg:TM is within the range from about 10:1 to about 200:1, the atomic ratio of X:TM is within the range from about 50:1 to about 400:1, the atomic ratio of Mg:X is within the range from about 0.2:1 to about 0.7:1, the atomic ratio of Mg:Al is at least 0.3:1, and the atomic ratio of Al:TM is not more than about 120:1 and said process is carried out at a polymerization temperature of at least 185° C.

4,319,012

SUSPENSION POLYMERIZATION PROCESS FOR MAKING VINYL RESINS FOR USE IN PLASTISOL

Marion G. Morningstar, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 23, 1979, Ser. No. 68,984

Int. Cl.[3] C08F *2/20*

U.S. Cl. 526—202 20 Claims

1. A suspension polymerization process for producing polymers of vinyl and vinylidene halides and copolymers thereof with each other or either with one or more vinylidene monomers having at least one terminal

grouping consisting of, forming a monomer premix containing the monomer or monomers to be polymerized, the aqueous reaction medium, from about 0.5% to about 1.5% by weight, based on the weight of the monomer(s), of a polyvinyl alcohol suspending agent which is hydrolyzed polyvinyl acetate having a degree of hydrolysis in the range of about 65% to about 85%, and from about 0.1% to about 1.5% by weight, based on the weight of the monomer(s) of a nonionic surfactant having a Hydrophile-Lipophile Balance of less than about 3.5, agitating said premix to form suspended droplets of monomer(s) in the premix, adding from about 0.01% to about 0.5% by weight, based on the weight of the monomer(s), of an oil-soluble free-radical yielding polymerization catalyst to said agitated premix, polymerizing said premix with continued agitation at a temperature in the range of about 30° C. to about 70° C. to form an aqueous slurry of dense, spherical and glassy polymer particles having a diameter in the range of about 10 to about 100 microns, and thereafter recovering said particles from said slurry, and wherein polymer buildup during the polymerization process is substantially reduced.

4,319,013

POWDERED CATIONIC POLYELECTROLYTES, BASED ON ACRYLAMIDE AND QUATERNIZED OR SALIFIED DIMETHYL-AMINOETHYL ACRYLATE, PROCESS FOR PRODUCING THEM

Jean Cabestany, Stains; Claude Trouve, Paris, and Dominique Depernet, Stains, all of France, assignors to Societe Francaise Hoechst, France

Filed May 12, 1978, Ser. No. 905,609

Claims priority, application France, May 16, 1977, 77 14994

Int. Cl.[3] C08F *2/00, 6/14, 28/02, 220/38*

U.S. Cl. 526—287 9 Claims

1. Cationic polyelectrolyte in water-soluble powder form, applicable to the flocculation of municipal sludge, said polyelectrolyte comprising a mixture of copolymers of acrylamide and of a cationic monomer of quaternised or salified dimethyaminoethyl acrylate; said mixture of copolymers consisting essentially of copolymers each containing in molar proportions 10 to 50% of cationic units spaced regularly along its copolymer chain; said mixture of copolymers having an intrinsic viscosity higher than 6 dl/g measured at 30° C. in a molar solution of NaCl, and a measured cationicity higher than 90% of the theoretical cationicity.

4,319,014

ACID STABLE SURFACTANT

Warren J. Peascoe, Woodbridge, Conn.; Woodrow W. White, Baton Rouge, La., and Linda E. Somma, Waterbury, Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Nov. 29, 1979, Ser. No. 98,574

Int. Cl.[3] C08F *228/02, 2/26*

U.S. Cl. 526—287 3 Claims

1. A copolymer having a molecular weight of 700 to 5000, said copolymer being a copolymer of:

(a) an unsaturated carboxylic acid selected from the group consisting of acrylic acid, methacrylic acid, vinyl acetic acid and crotonic acid;

(b) another unsaturated monomer, which does not contain a carboxylic acid, selected from the group consisting of styrene, butadiene, vinyl chloride, vinylidene chloride and monomers of the formula

wherein R_1 is $-CO_2CH_3$, $-CO_2C_2H_5$, $-CO_2NH_2$, $-CN$, $-CO_2CH_2CH_2OH$, or $-CONHCH_2OH$ and R_2 and R_3 are methyl or hydrogen;

(c) an unsaturated monomer containing a sulfonic acid group or its salt selected from the group consisting of
para-styrene sulfonic acid,
ortho-styrene sulfonic acid,
para-isopropenyl sulfonic acid,
para-vinyl-alpha-toluene sulfonic acid,
para-isopropenyl-alpha-toluene sulfonic acid,
sodium para-styrene sulfonate,
potassium ortho-styrene sulfonate,
2-bromo-4-isopropenyl benzene sulfonic acid,
3-vinyl toluene 6-sulfonic acid sodium salt,

3-ethyl-4-vinyl-benzene sulfonic acid,
2,3-dichloro-4-vinyl benzene sulfonic acid,
1,3-disulfo-2-(4-vinyl)propane,
potassium ethylene sulfonate,
1-propene 3-sulfonic acid,
1-propene 2-sulfonic acid,
1-butylene 3-sulfonic acid,
2-methyl 1-propene 3-sulfonic acid,
sodium ethylene sulfonate,
2-sulfoethylmethacrylate sodium salt,
2-sulfoethylmethacrylate potassium salt,
1,3-disulfo 2-propanol ester of methacrylic acid,
2-sulfoethylacryalte,
3-sulfopropylacrylate sodium salt,
N-acryloyl taurine,
N-acryloyl taurine sodium salt
N-methacryloyl taurine potassium salt
N-methacryloyl-aminopropane sulfonic acid
sodium salt, and
2-acrylamido-2-methylpropane sulfonic acid, and

(d) a primary or secondary alkyl mercaptan having 6 to 20 carbon atoms.

4,319,015

SYNTHETIC RESINS BASED ON CROSSLINKED COPOLYMERS OF MONOVINYL AND POLYVINYL COMPOUNDS

Werner Strüver; Harold Heller, both of Cologne, and Peter M. Lange, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 4, 1979, Ser. No. 81,967

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1978, 2846187

Int. Cl.³ C08F *212/34, 212/36, 220/12, 220/20*

U.S. Cl. 526—329.1 **6 Claims**

1. A synthetic resin based on a crosslinked copolymer of monovinyl and polyvinyl compounds, obtained by copolymerizing

(a) a styrene, the benzene nucleus of which is substituted by a C_1–C_4-alkyl group; halogen atom and/or nitro group and/or the side chain of which is substituted by a C_1–C_4-alkyl group; and/or a methacrylate of a monohydric alcohol containing 1 to 8 carbon atoms,

(b) methacrylate of a polyhydric alcohol and/or an aromatic polyvinyl compound and

(c) an unsaturated hydrocarbon selected from the group consisting of hexa-1,5-diene, 2-methyl-hexa-1,5-diene, 2,5-dimethyl-hexa-1,5-diene, hepta-1,6-diene, octa-1,7-diene and 1,2,4-trivinylcyclohexane, and/or a polyvinyl ether of a polyhydric alcohol

the total weight of components (b) and (c) being 0.5 to 70% by weight of the total weight of components (a) plus (b) plus (c), the weight of component (b) being 2 to 95% by weight of the total weight of components (b) and (c).

4,319,016

ULTRAVIOLET-ABSORBING AMINO COMPOUND AND METHOD OF MAKING

Moriji Kurobe; Ryusuke Tsuji; Eiichi Imao, all of Nagoya; Takayuki Masuyama, Toyota; Eizi Nagata, and Kazunori Kamada, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho; Toyota Jidosha Kogyo Kabushiki Kaisha, both of Aichi and Mitsui Toatsu Chemicals Incorporated, Tokyo, all of, Japan

Filed Sep. 21, 1979, Ser. No. 77,882

Claims priority, application Japan, Sep. 28, 1978, 53-119965

Int. Cl.³ C08G *8/26;* **B32B** *9/04*

U.S. Cl. 528—127 **29 Claims**

1. An ultraviolet-absorbing amino compound which is formed by mixing (a) a hydroxyphenyl compound having an absorption maximum within a wavelength region of 300 to 400 mμ and containing a mono-, di- or tetra-hydroxyphenyl group, (b) an amino compound containing at least one amino group, and (c) formaldehyde, in the presence of at least one alcohol; and heating the mixture with stirring to react the three components to form the ultraviolet-absorbing amino compound reaction product.

4,319,017

SEMI OR FULLY CONTINUOUS PROCESS FOR POLYESTER OF BISPHENOL AND DICARBOXYLIC ACID BY TRANSESTERIFICATION POLYMERIZATION AND PRODUCT THEREOF

George M. Kosanovich, Wilson, and Gideon Salee, Williamsville, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Mar. 10, 1980, Ser. No. 128,742

Int. Cl.³ C08G *63/22*

U.S. Cl. 528—176 **77 Claims**

1. In the process of preparing a linear aromatic polyester by transesterification melt polymerization of monomer reactants consisting essentially of a bisphenol and a diaryl ester of a dicarboxylic acid in a polymerization reaction zone which comprises reacting said bisphenol and said diaryl ester in a first reaction stage of said zone to prepare a polyester oligomer, and thereafter continuing the reaction in a second reaction stage of said zone to produce the polyester product,

the improvement wherein the polymerization is carried out in the first reaction stage either batchwise or substantially continuously, and the polymerization is continued in the second reaction stage substantially continuously, with the provision that when the polymerization in the first reaction stage is carried out batchwise, the polymerization in the second stage is carried out in a wiped film reaction zone.

4,319,018

PROCESS FOR PRODUCING POLYMETHYLENE POLYPHENYL POLYCARBAMATES

Katsuharu Miyata; Seiji Hasegawa; Shinobu Aoki, all of Yokohama, and Isao Hara, Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

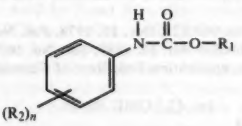
Filed Jul. 2, 1980, Ser. No. 164,513

Claims priority, application Japan, Jul. 9, 1979, 54-85872

Int. Cl.³ C08G *12/26*

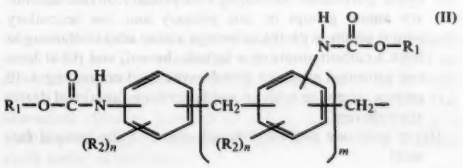
U.S. Cl. 528—232 **20 Claims**

1. In the process of reacting a N-phenyl carbamate of the general formula (I)



(I)

(in which R_1 is a C_1–C_6 lower alkyl or cycloalkyl group; R_2 is a hydrogen atom, halogen atom, a C_1–C_6 lower alkyl or alkoxy group, and n stands for an integer of 1–4) with formaldehyde or a formaldehyde-supplying substance, in the presence of an acid catalyst, to form a polymethylene polyphenyl polycarbamate of the general formula (II),



(II)

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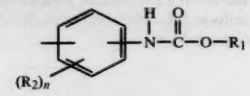
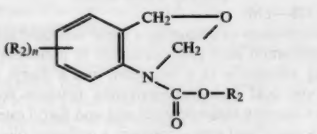
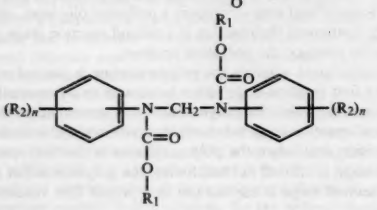


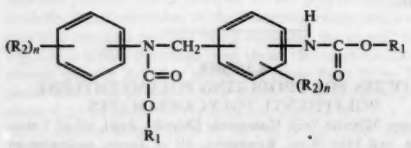
(in which R_1, R_2 and n have the same significations as in the case of general formula (I), and m is zero or an integer of 1-5), a process for making a polymethylene polyphenol polycarbamate which is characterized in that the above reaction is performed in the concurrent presence of a compound or a mixture of at least two compounds selected from those covered by the following three formulae (III), (IV) and (V),



(III)



(IV)



(V)

4,319,019

POLYAMINES CONTAINING AMIDE GROUPS

Wolfgang Lehmann, Leverkusen; Friedhelm Müller, Odenthal; Günther Cramn; Knut Hammerström, both of Cologne, and Wilfried Löbach, Bonn, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 969,822, Dec. 15, 1978, Pat. No. 4,250,299. This application Jul. 14, 1980, Ser. No. 167,879

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1977, 2756431

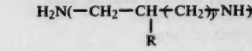
Int. Cl.³ C08G *69/48*

U.S. Cl. 528—324 **12 Claims**

1. A water-soluble polyamine, obtained by reacting

(A) at least one water-soluble or water-dispersible basic polyamide which has been prepared by condensation of (a) at least one aliphatic polyamine containing at least two primary amino groups and at least one secondary or tertiary amino group, or of a mixture of such a polyamine and at least one aliphatic, cycloaliphatic, araliphatic or heterocyclic polyamine containing two primary or two secondary amino groups or one primary and one secondary amino group, with (b) an omega amino acid containing at least 3 carbon atoms or a lactam thereof, and (c) at least one saturated aliphatic dicarboxylic acid containing 4-10 carbon atoms, or with an amide-forming functional derivative thereof,

(B) at least one polyalkylenepolyamine of the general formula



in which

R denotes H or CH_3,

Y is in each case the same or different and denotes the number 0 or 1 and

x denotes a number from 4 to 2,500,

or a mixture of such a polyalkylenepolyamine with at least one amine of the same general formula, but in which

X denotes a number from 1 to 3, the weight ratio of basic polyamides A to polyalkylenepolyamines B ranging from 1 to 10:10 to 1, and

(C) an alpha, omega,-alkylene dihalide, 0.01-0.5 mol of alkylene dihalide being used per mol of basic nitrogen atom in the basic polyamide and polyalkylenepolyamine.

4,319,020

POLYQUATERNARY FLOCCULANTS

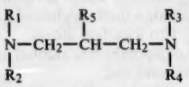
Anthony T. Coscia, South Norwalk; Robert F. Tarvin, Fairfield, and Dinshaw F. Bardoliwalla, Norwalk, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 5, 1980, Ser. No. 213,300

Int. Cl.³ C08G *73/00*

U.S. Cl. 528—405 **11 Claims**

1. A method for reducing the total combined epihalohydrin and 1,3-dihalo-2-propanol residue content of a polyquaternary polymer prepared from an epihalohydrin, a dialkylamine wherein the alkyl groups have about 1 to 3 carbon atoms, and optionally a polyfunctional amine, while maintaining the dialkylamine residue content of said polymer below about 1000 ppm, which comprises treating said polymer with a residue reducing effective amount of a treatment compound of the formula:



wherein R_1, R_2, R_3 and R_4 are alkyl (C_1-C_3), and R_5 is hydrogen or hydroxyl.

4,319,021

METHOD FOR HIGH TEMPERATURE PHASE SEPARATION OF SOLUTIONS CONTAINING ETHYLENE COPOLYMER ELASTOMERS

Cyrus A. Irani, Monroeville, Pa.; Charles Cozewith, Westfield, and Stephen S. Kasegrande, Lincoln Park, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

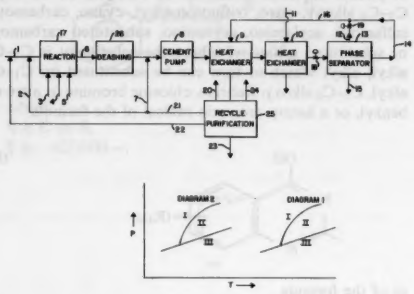
Filed Mar. 14, 1980, Ser. No. 130,257

Int. Cl.³ C08F *6/10*

U.S. Cl. 528—498 **26 Claims**

1. A process for the recovery of polymer from a solution of said polymer in a solvent comprising adding a low molecular weight hydrocarbon selected from the group consisting of alkanes and alkenes with 2 to 4 carbons to said solution; subjecting said solution including said added hydrocarbon to a temperature at which two liquid phases can form and a pressure sufficient to prevent the creation of a vapor phase; reducing said pressure to from about 0.5 to about 10 psig less than the bubble point of said solution and added hydrocarbon such that a polymer-rich liquid phase, a polymer-lean liquid phase, and a

vapor phase rich in said hydrocarbon are formed; separating said polymer-rich liquid phase from said polymer-lean liquid



phase and said vapor phase; and recovering said polymer from said polymer-rich liquid phase.

4,319,022

2-O-SUBSTITUTED SULFONYL DERIVATIVES OF FORTIMICIN B

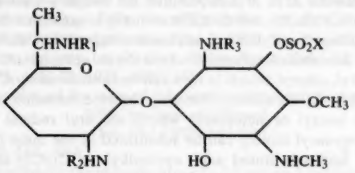
Jerry R. Martin; John S. Tadanier, both of Waukegan, and Paulette Collum, Zion, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 863,009, Dec. 21, 1979, Pat. No. 4,169,198. This application Apr. 27, 1980, Ser. No. 131,468

Int. Cl.[3] **A61K** *31/71;* **C07H** *15/22*

U.S. Cl. 536—17 R **7 Claims**

1. A compound of the formula:



wherein each R_1, R_2 or R_3 are the same or different members of the group consisting of hydrogen or benzyloxycarbonyl and X is a hydrocarbon having from 1 to 8 carbon atoms, inclusive; or a pharmaceutically acceptable salt thereof when any of R_1, R_2 or R_3 are hydrogen.

4,319,023

PROCESS FOR PRODUCING REGENERATED CELLULOSIC ARTICLES AND FOR RECOVERING THE SOLVENT CHEMICALS

Olli Aaltonen, and Martti Alkio, both of Espoo, Finland, assignors to Technical Research Centre of Finland, Espoo, Finland

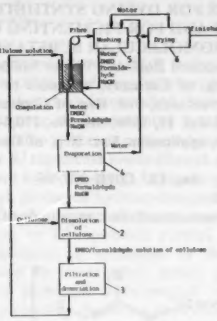
Filed Mar. 18, 1981, Ser. No. 245,195

Claims priority, application Finland, Mar. 28, 1980, 800962

Int. Cl.[3] **C08B** *00/00*

U.S. Cl. 536—57 **3 Claims**

1. A process for producing regenerated cellulosic articles from cellulose which has been dissolved in a mixture of dimethyl sulfoxide and formaldehyde or paraformaldehyde, and for recovering the solvent chemicals, characterized in that (a) the cellulose solution is brought into contact with an aqueous solution, the pH of which is at least 9 and the adjustment of pH has been carried out by means of a strong base or an alkaline salt which does not react with formaldehyde and the content of which in the coagulation solution is not more than 0.1% by weight, so that the product is coagulated and regenerated in the desired form, such as fibres, films or shaped articles, (b) the coagulation solution is evaporated in one stage or plurality of stages so that the dimethyl sulfoxide and the formaldehyde of the cellulose remain in the evaporation residue/s and (c) the



evaporation residue/s is/are recycled for the production of cellulose solution, purified, if so required.

4,319,024

METHOD OF PREPARING β-ALKOXYACRLONITRILES

Hermann Peeters; Uwe Prange, both of Niederkassel, and Wilhelm Vogt, Köln-Sülz, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,188

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912343; Mar. 29, 1979, 2912344; Mar. 29, 1979, 2912345; Aug. 1, 1979, 2931228

Int. Cl.[3] **C07C** *121/30, 121/48, 121/75*

U.S. Cl. 542—413 **9 Claims**

1. A process for the preparation of a beta-alkoxyacrylonitrile of the formula

$$R'O—CH=CR—CN \qquad (C)$$

wherein R represents H, straight-chain or branched or cyclic alkyl moieties of 1 to 20 C atoms, straight-chain or branched moieties $—(CH^2)_n—CN$, $—(CH_2)_n—OR''$ or $—(CH_2)_n—CH(OR'')_2$ with n=0 to 5 and R''=alkyl moieties with 1–12 C atoms, or $—(CH_2)_{n+1}—Cyc$, with Cyc=isocyclic or heterocyclic, mononuclear or polynuclear aromatic or cycloaliphatic ring systems, which in some cases bear substituents on the rings, and n=0 to 5, and wherein R' represents straight-chain or branched alkyl or alkenyl moieties with 1 to 12 C atoms, isocyclic or heterocyclic, mononuclear or polynuclear aromatic or cycloaliphatic ring systems, which in some cases bear substituents, or $—(CH_2)_p—Cyc$ with Cyc in the above meaning, the moieties $—(CH_2)_p—OR'''$ or $—(CH_2—CH_2—O)_q—R'''$ with p=1 to 5 and q=1 to 4 and R'''=straight-chain or branched alkyl moieties with 1 to 12 C atoms, which comprises contacting a compound of the formula

$$(1/\alpha Me)\ O—CH=CR—CN \qquad (A)$$

wherein R has the above-named meaning and Me is an alkali metal with $\alpha=1$ or an alkaline earth metal with $\alpha=2$, at an elevated temperature with a halogen compound of the formula R'-Hal (B), wherein R' has the above-given meaning and Hal represents chlorine, bromine or iodine, in the presence of a basically reacting compound of the alkali metal or alkaline earth metal, as stabilizer.

4,319,025

ANTHRAQUINONE-AZOMETHINE COMPOUNDS, PROCESSES FOR THEIR PREPARATION AND PROCESSES FOR DYEING SYNTHETIC FIBRE MATERIALS AND FOR PIGMENTING ORGANIC MACROMOLECULAR SUBSTANCES

Rütger Neeff; Meinhard Rolf, and Walter Müller, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

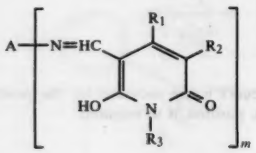
Filed Jul. 21, 1980, Ser. No. 170,449

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931710

Int. Cl.³ C07D *213/68*

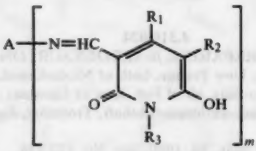
U.S. Cl. 542—415 **3 Claims**

1. Anthraquinone-azomethine compounds of the formula



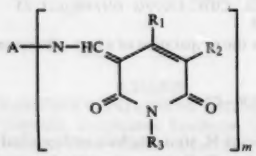
(I)

or of the tautomeric formula



(Ia)

or of the tautomeric formula



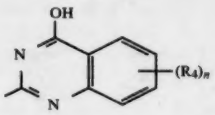
(Ib)

in which

A denotes an anthraquinone radical which is free from sulphonic acid groups and optionally further substituted,

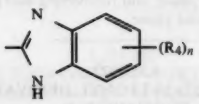
R_1 denotes hydrogen, C_1–C_4-alkyl, hydroxy-C_1–C_4-alkyl, phenyl, phenyl substituted by halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, trifluoromethyl, cyano, carbamoyl, carbamoyl substituted by C_1–C_4 alkyl, phenyl, substituted phenyl with a substituent of C_1–C_4 alkyl, C_1–C_4 alkoxy, fluorine, chlorine, bromine or nitro or benzyl, sulfamoyl, sulfamoyl substituted by C_1–C_4 alkyl, phenyl which in turn is optionally further substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, fluorine, chlorine, bromine or nitro or benzyl, acylamino, or arylamino, carboxyl, carboxylic acid, C_1–C_4 alkyl ester or hydroxyl,

R_2 denotes hydrogen, halogen, nitro, cyano, carbamoyl, or sulfamoyl, substituted carbamoyl or substituted sulfamoyl where the substituent is C_1 to C_4 alkyl, phenyl which in turn can be itself substituted by C_1 to C_4 alkyl, C_1 to C_4 alkoxy, fluorine, chlorine, bromine or nitro or benzyl, sulfonic acid C_1–C_4 alkyl ester, sulphonic acid aryl ester, C_1–C_4 alkylcarbonyl, C_1–C_4-alkoxycarbonyl, benzoyl, benzoyl substituted by halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, trifluoromethyl, cyano, carbamoyl, sulfamoyl, carbamoyl or sulfamoyl substituted by C_1–C_4 alkyl, phenyl which in turn can be substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, fluorine, chlorine, or bromine or nitro, or benzyl, acylamino or arylamino, alkyl or phenyl sulphone, or phenyl sulphone substituted by halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, trifluoromethyl, cyano, carbamoyl, sulfamoyl, acylamino, arylamino, substituted carbamoyl or substituted sulfamoyl where the substituent is C_1–C_4 alkyl, alkyl which in turn can be substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, fluorine, chlorine bromine or nitro or benzyl, or a hetero-aromatic radical of the formula



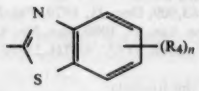
(II)

or of the formula



(III)

or of the formula



(IV)

R_3 denotes aryl, aryl substituted by halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, trifluoromethyl, cyano, carbamoyl, sulfamoyl, acylamino, arylamino, substituted carbamoyl or substituted sulfamoyl where the substituent is C_1 to C_4 alkyl, phenyl which in turn can be substituted by C_1 to C_4 alkyl, C_1–C_4 alkoxy, fluorine, chlorine, bromine or nitro or benzyl or heteroaryl where the aryl radical of the heteroaryl moiety can be substituted in the same manner as said substituted aryl, cycloalkyl or C_1–C_{12} alkyl, it being possible for the alkyl chain to be interrupted by oxygen or sulfur and/or substituted by hydroxyl, $N(R_5)_2$— or $—N(R_5)_3{}^{\oplus}X^{\ominus}$ groups

R_4 denotes halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, trifluoromethyl, cyano, carboxamide, sulphonamide, acylamino, or arylamino,

R_5 denotes hydrogen, C_1–C_4 alkyl, cycloalkyl, aryl or substituted aryl substituted by halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro, trifluoromethyl, cyano, carbamoy, sulfamoyl, acylamino, arylamino, substituted carbamoyl or substituted sulfamoyl where the substituent is C_1–C_4 alkyl, phenyl which in turn can be substituted by C_1–C_4 alkyl, C_1–C_4 alkoxy, fluorine, chlorine, bromine, or nitro, or benzyl,

X denotes an anion,

m denotes 1, 2, 3 or 4 and

n denotes 0, 1, 2, 3 or 4.

4,319,026

HETEROCYCLIC-SUBSTITUTED HYDRAZIDES AND HYDRAZONES AS PLANT GROWTH REGULATORS

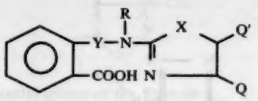
Loren W. Hedrich, Orange, Tex.; Natu R. Patel, Overland Park, Kans., and Joel L. Kirkpatrick, Washington Crossing, Pa., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Aug. 14, 1980, Ser. No. 178,241

Int. Cl.³ C07D *277/62, 277/20*

U.S. Cl. 542—419 **4 Claims**

1. Compounds of the formula:



(I)

in which
X is O or S,
Y is —CONH—;

or

R is H or CH_3,
Q is phenyl or chlorophenyl when
Q' is hydrogen, or Q and Q' together may form the remainder of a benzene ring.

4,319,027

PROCESS FOR THE MANUFACTURE OF CEOHEM ENOL DERIVATIVES

Robert B. Woodward, Cambridge, Mass., and Hans Bickel, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 913,429, Jun. 7, 1978, abandoned, which is a division of Ser. No. 671,193, Feb. 10, 1976, Pat. No. 4,110,533. This application May 7, 1979, Ser. No. 36,483

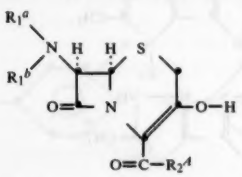
Claims priority, application Switzerland, Feb. 20, 1975, 2157/75; Aug. 25, 1975, 10962/75

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.³ C07D *501/04*

U.S. Cl. 544—016 **9 Claims**

1. Process for the manufacture of a 7β-amino-3-cephem-3-ol-4-carboxylic acid compound of the formula

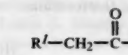


(IA)

wherein R_1^a represents an acyl group of the formula

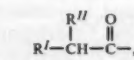
(A1)

wherein R^I represents hydrogen, cyclopentyl, cyclohexyl or cycloheptyl, or such cycloalkyl which is substituted in the 1-position by amino, protected amino, sulphoamino or sulphoamino in the form of an alkali metal salt, or R^I represents phenyl, naphthyl or tetrahydronaphthyl, or phenyl, naphthyl or tetrahydronaphthyl substituted by hydroxyl, protected hydroxyl, and/or by halogen, or R^I represents 4-isoxazolyl, or R^I represents an amino group which is N-substituted by lower alkyl or halogen substituted lower alkyl, or R_1^a represents an acyl group of the formula



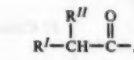
(A2)

wherein R^I represents lower alkyl, halogeno-lower alkyl, phenyloxy-lower alkyl, hydroxyphenyloxy-lower alkyl, protected hydroxy-phenyloxy-lower alkyl, halogeno-phenyloxy-lower alkyl, or lower alkyl substituted by amino and/or carboxyl, wherein amino is free or protected and carboxyl is free or protected, or R^I represents lower alkenyl, phenyl, hydroxyphenyl, protected hydroxyphenyl, halogeno-phenyl, hydroxy-halogeno-phenyl, protected hydroxy-halogeno-phenyl, amino-lower alkyl-phenyl, protected amino-lower alkyl-phenyl, phenyloxyphenyl, or R^I represents pyridyl, pyridinium, thienyl, furyl, imidazolyl or tetrazolyl, or these heterocyclic groups substituted by lower alkyl, amino, protected amino, aminomethyl or protected aminomethyl, or R^I represents lower alkoxy, phenyloxy, hydroxy-phenyloxy, protected hydroxyphenyloxy; halogeno-phenyloxy, lower alkylthio, lower alkenylthio, phenylthio, pyridylthio, 2-imidazolylthio, 1,2,4-triazol-3-ylthio, 1,3,4-triazol-2-ylthio, 1,2,4-thiadiazol-3-ylthio, 1,3,4-thiadiazol-2-ylthio, or 5-tetrazolylthio, and these heterocyclylthio groups, substituted by lower alkyl, or R^I represents halogeno, lower alkoxycarbonyl, cyano, carbamoyl, N-lower alkyl-carbamoyl, N-phenylcarbamoyl, lower alkanoyl, benzoyl, or azido, or R_1^a represents an acyl group of the formula



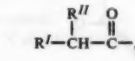
(A3)

wherein R^I represents lower alkyl, phenyl, hydroxyphenyl, protected hydroxyphenyl, halogeno-phenyl, hydroxy-halogenophenyl, protected hydroxy-halogeno-phenyl, furyl, thienyl, or isothiazolyl, and also represents 1,4-cyclohexadienyl, and R^{II} represents amino, protected amino, guanidinocarbonyl-amino, sulphoamino, sulphoamino in alkalimetal salt-form, azido, carboxyl, carboxyl in alkali-metal salt-form, protected carboxyl, cyano, sulpho, hydroxyl, protected hydroxyl, O-lower alkyl-phosphono, O,O'-di-lower alkylphosphono or halogeno, or R_1^a represents a group of the formula



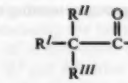
(A4)

wherein R^I and R^{II} each represent halogeno, or lower alkoxycarbonyl, or R_1^a represents a group of the formula



(A5)

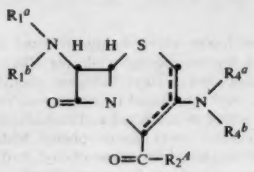
wherein R^I represents phenyl, hydroxyphenyl, protected hydroxyphenyl, hydroxy-halogeno-phenyl, protected hydroxy-halogeno-phenyl, furyl, thienyl, isothiazolyl or 1,4-cyclohexadienyl, and R^{II} represents aminomethyl or protected aminomethyl, or R_1^a represents a group of the formula



(A6)

wherein each of the groups R^I, R^{II} and R^{III} represents lower alkyl, and R_1^b represents hydrogen, or R_1^a and R_1^b together represent 1-oxo-3-aza-1,4-butylen, such group substituted in the 2-position by a group R^I as defined under formula (A_3) and such group substituted in the 4-position by lower alkyl, and R_2^A represents a group which together with the carbonyl

grouping —C(=O)— forms a protected esterified carboxyl group, characterised in that a compound of the formula



(III)

wherein R_1^a, R_1^b and R_2^A have the meanings mentioned under formula IA, the group —N(R_4^a) (R_4^b) denotes a secondary amino group, wherein one of the substituents R_4^a and R_4^b represents hydrogen and the other represents lower alkyl, lower alkoxy-lower alkyl, lower alkyl-thio lower alkyl, cyclohexyl-lower alkyl, phenyl-lower alkyl, thienyl-lower alkyl, cycloalkyl with 3 to 7 carbon atoms, or such cycloalkyl substituted by lower alkyl, lower alkoxy, lower alkylthio, cyclohexyl, phenyl, or furyl, or wherein —N(R_4^a) (R_4^b) denotes a tertiary amino group, wherein each of the substituents R_4^a and R_4^b, independent of each other is lower alkyl, lower alkoxy-lower alkyl, lower alkylthio-lower alkyl, cyclohexyl-lower alkyl, phenyl-lower alkyl, thienyl-lower alkyl, cycloalkyl with 3 to 7 carbon atoms, or such cycloalkyl substituted by lower alkyl, lower alkoxy, lower alkylthio, cyclohexyl, phenyl, or furyl, or wherein —N(R_4^a) (R_4^b) is 1-aziridinyl, 1-pyrrolidinyl, 1-piperidyl, 1H-2,3,4,5,6,7-hexahydroazepinyl, 4-morpholinyl, 4-thio-morpholinyl, 1-piperazinyl, or 4-methyl-1-piperazinyl and in which the double bond can be in the 2,3-position or the 3,4-position, with water and a catalytic to equimolar amount of a carboxylic, sulphonic or mineral acid, at a temperature of −10° C. to +40° C.

4,319,028

7-(2-(SUBSTITUTED BENZOYL)AMINO)ACETAMIDO)CEPHALOSPORINS

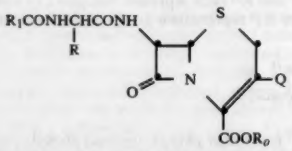
David K. Herron, and William H. W. Lunn, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 26, 1976, Ser. No. 717,774

Int. Cl.[3] **C07D** *501/52*

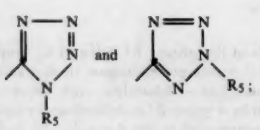
U.S. Cl. 544—26 **37 Claims**

1. The compound of the formula

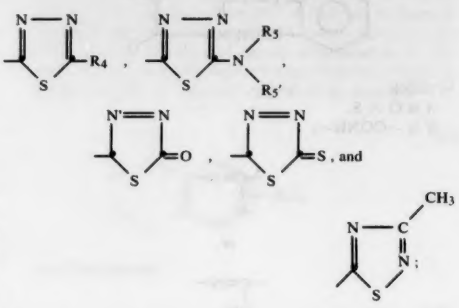


wherein Q is a group of the formula —CH_2R_2
wherein R_2 is
a group of the formula —SR_3
wherein R_3 is

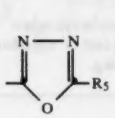
(a) a tetrazolyl group selected from the group consisting of



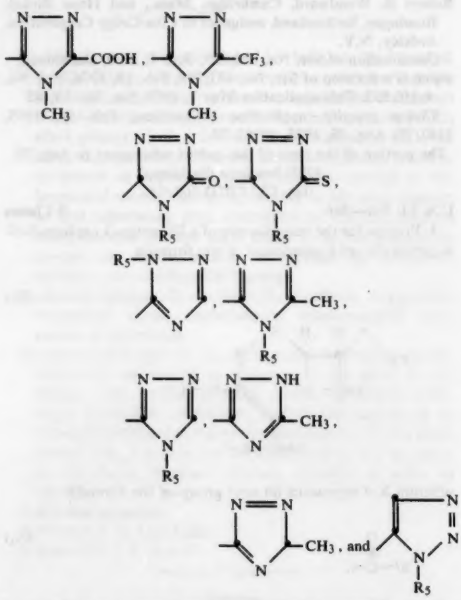
(b) a thiadiazolyl group selected from the group consisting of



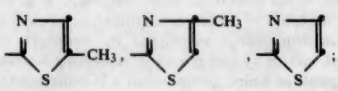
(c) an oxadiazolyl group of the formula



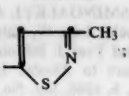
(d) a triazolyl group selected from the group consisting of



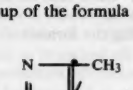
(e) a thiazolyl group selected from the group consisting of



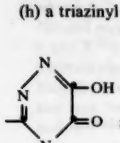
(f) an isothiazolyl group of the formula



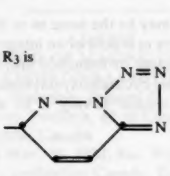
(g) an oxazolyl group of the formula

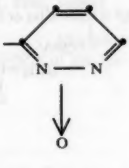


(h) a triazinyl group of the formula

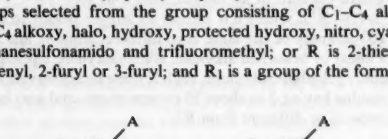


R_3 is





wherein in the above formulas R_4 is hydrogen, C_1–C_4 alkyl, aminomethyl, protected aminomethyl or hydroxymethyl, and R_5 and R_5' are hydrogen or C_1–C_4 alkyl; and R is cyclohexadienyl, phenyl or phenyl substituted with 1 or 2 groups selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, hydroxy, protected hydroxy, nitro, cyano, methanesulfonamido and trifluoromethyl; or R is 2-thienyl, 3-thienyl, 2-furyl or 3-furyl; and R_1 is a group of the formula



wherein X is 1, 2, or 3, and y is 1 or 2, and wherein A is a substituent selected from the group consisting of hydrogen, halo, C_1–C_4 alkoxy, amino, protected amino, hydroxy, protected hydroxy, C_1–C_4 alkyl, nitro, cyano, methanesulfonamido and trifluoromethyl, and R_6 is hydrogen or an amino protecting group; and R_o is hydrogen, indanyl, phthalidyl or an acyloxymethyl group of the formula

wherein Y' is C_1–C_4 alkyl or phenyl; and when R_o is hydrogen, the pharmaceutically acceptable nontoxic salts of the acids represented thereby.

4,319,029

HYDROXYALKANAMIDE TETRAHYDROCARBAZOLES

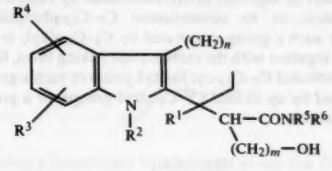
Gervais Dionne; Andre A. Asselin, both of St. Laurent, and Leslie G. Humber, Dollard des Ormeaux, all of Canada, assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 64,343, Aug. 6, 1979, Pat. No. 4,235,903. This application Jun. 9, 1980, Ser. No. 157,734

Int. Cl.[3] **C07D** *413/06, 209/86*

U.S. Cl. 544—142 **1 Claim**

1. A compound of formula III



(III)

in which R^1 and R^2 each is hydrogen or lower alkyl; R^3 and R^4 each is hydrogen, lower alkyl, halo, nitro, trifluoromethyl or lower alkoxy; R^5 and R^6 each is hydrogen or lower alkyl or R^5 and R^6 together with the nitrogen atom to which they are attached form a pyrrol-1-yl, piperidin-1-yl or morpholin-4-yl; m is 2 or 3; and n is 1 or 2.

4,319,030

ALKYLATED DIAZA-SPIRODECANES

Hartmut Wiezer, Gersthofen; Gerhard Pfahler, Augsburg; Harald Häberlein, and Günther Nowy, both of Gersthofen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

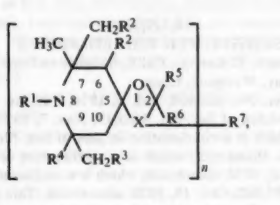
Filed Aug. 18, 1980, Ser. No. 178,927

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2933732

Int. Cl.[3] **C07D** *405/04*

U.S. Cl. 546—19 **1 Claim**

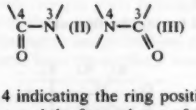
1. A polyalkyl-diaza-spirodecane of the formula



(I)

in which

X stands for a group of the formulae (II) or (III)



the indices 3 and 4 indicating the ring positions in the diaza-spirodecane system, and the free valancy of the nitrogen atom producing the linkage with R^7;

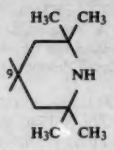
R^1 is hydrogen, oxygen or C_1–C_{12}-alkyl,

R^2 and R^3 either are identical and represent hydrogen or a C_1–C_4-alkyl group, in which case

R^4 is a methyl group; or

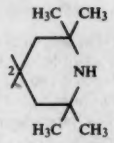
R^2 is hydrogen or C_1–C_5-alkyl; and

R^3 and R^4, together with the carbon atoms to which they are linked, form a C_5- and C_6-cycloalkyl group or a group of the formula



R^5 and R^6 are identical or different and represent hydrogen, C_1–C_{30}-alkyl, an unsubstituted phenyl or naphthyl group or a phenyl or naphthyl group substituted by chlorine or C_1–C_4-alkyl, or an unsubstituted C_7–C_{12}-phenylalkyl group or such a group substituted by C_1–C_4-alkyl, or

R^5 and R^6, together with the carbon atom linking them, form an unsubstituted C_5–C_{18}-cycloalkyl group or such a group substituted by up to four C_1–C_4-alkyl groups, or a group of the formula



n is 2, and

R^7 is an alkylene group having from 2 to 30 carbon atoms, an alkenylene group having from 2 to 30 carbon atoms, or a phenyldialkylene group having from 8 to 18 carbon atoms;

and their salts with non-oxidizing mineral acids, aliphatic sulfonic or phosphonic acids, aliphatic mono-, di- or polycarboxylic acids, or aromatic mono- or polycarboxylic acids.

4,319,031

SUBSTITUTED THIAZOLIDINES

Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

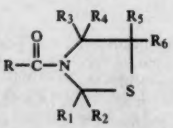
Division of Ser. No. 655,938, Feb. 6, 1976, Pat. No. 4,186,130, which is a division of Ser. No. 566,019, Nov. 7, 1975, Pat. No. 3,959,304, which is a continuation-in-part of Ser. No. 484,514, Jul. 1, 1974, abandoned, which is a continuation of Ser. No. 356,548, May 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 297,582, Oct. 13, 1972, abandoned. This application Jun. 18, 1979, Ser. No. 49,514

The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.

Int. Cl.³ C07D *277/04, 263/04*

U.S. Cl. 548—200 **17 Claims**

1. A compound having the formula



in which R is haloalkyl having 1 to 10 carbon atoms, inclusive, and halo is selected from chloro and bromo, R_1 is lower alkyl having from 1 to 4 carbon atoms, inclusive, R_2 is lower alkyl having from 1 to 4 carbon atoms, inclusive, and R_3, R_4, R_5 and R_6 are each hydrogen.

4,319,032

DERIVATIVES OF AMINOALKYL ALKYLENE UREAS

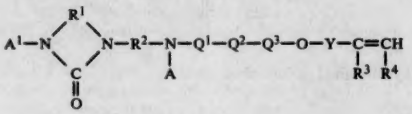
Joseph M. Sandri, Arnold; John W. Calentine, Pasadena; Seymour M. Linder, and Yves J. Billioux, both of Baltimore, all of Md., assignors to Alcolac Inc., Baltimore, Md.

Filed Jun. 6, 1980, Ser. No. 157,238

Int. Cl.³ C07D *233/36, 233/38*

U.S. Cl. 548—320 **10 Claims**

1. A compound having the formula:



where

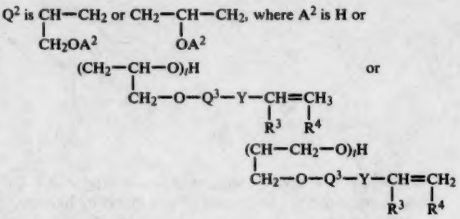
R^1 is alkylene having 2 to 3 carbon atoms;

R^2 is alkylene having 2 to about 10 carbon atoms;

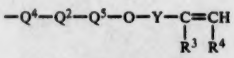
R^3 is H or CH_3;

R^4 is H or CH_3 and may be the same as or different from R^3;

Q^1 is $(R^5—O)_m$ where m is zero or an integer from 1 to about 100, and R^5 is a linear or branched alkylene, alkoxyalkylene, cycloalkylene, cycloalkoxyalkylene, arylalkylene, or aryloxyalkylene residue having 2 to about 20 carbon atoms;

Q^2 is  where t is zero or an integer from 1 to 10;

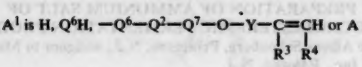
Q^3 is $(O—R^6)_n$ where n is zero or an integer from 1 to about 100 and may be the same as or different from m, and R^6 is a linear or branched alkylene, alkoxyalkylene, cycloalkylene, cycloalkoxyalkylene, arylalkylene or aryloxyalkylene residue having 2 to about 20 carbon atoms, and may be the same as or different from R^5;

Y is CH_2 or ; A is H, Q^4H or 

where

Q^4 is $(R^7—O)_p$ where p is zero or an integer from 1 to about 100 and may be the same as or different from m and n, and R^7 is a linear or branched alkylene, alkoxyalkylene, cycloalkylene, cycloalkoxyalkylene, arylalkylene, or aryloxyalkylene residue having 2 to about 20 carbon atoms, and may be the same as or different from R^5 or R^6;

Q^5 is $(O—R^8)_q$ where q is zero or an integer from 1 to about 100 and may be the same as or different from m, n and p, and R^8 is a linear or branched alkylene, alkoxyalkylene, cycloalkylene, cycloalkoxyalkylene, arylalkylene, or aryloxyalkylene residue having 2 to about 20 carbon atoms, and may be the same as or different from R^5, R^6 and R^7; and



where

Q^6 is $(R^9—O)_r$ where r is zero or an integer from 1 to about 100 and may be the same as or different from m, n, p and q, and R^9 is a linear or branched alkylene, alkoxyalkylene, cycloalkylene, cycloalkoxyalkylene, arylalkylene, or aryloxyalkylene residue having 2 to about 20 carbon atoms, and may be the same as or different from R^5, R^6, R^7 and R^8; and

Q^7 is $(O–R^{10})_s$ where s is zero or an integer from 1 to about 100 and may be the same as or different from m, n, p, q and r, and R^{10} is a linear or branched alkylene, alkoxyalkylene, cycloalkylene, cycloalkoxyalkylene, arylalkylene or aryloxyalkylene residue having 2 to about 20 carbon atoms, and may be the same as or different from R^5, R^6, R^7, R^8, and R^9.

4,319,033

METHOD OF MAKING CERTAIN 2,3-DIHYDRO-1,4-DITHIINS

Allan K. S. Tsai, Waterloo; Duncan D. Lennox, Elmira, and Arthur D. Brewer, Puslinch, all of Canada, assignors to Uniroyal Ltd., Ontario, Canada

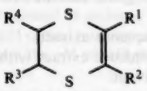
Filed Mar. 26, 1981, Ser. No. 247,670

Claims priority, application Canada, Dec. 2, 1980, 365995

Int. Cl.³ C07D *335/02*

U.S. Cl. 549—15 **10 Claims**

1. A method of making a 2,3dihydro-1,4-dithiin of the formula



wherein:

R^1 and R^2 are selected from hydrogen or the same or different alkyl groups having from 1 to 6 carbon atoms, or are joined together to form a ring with 3 or 4 methylene groups;

R^3 and R^4 are selected from hydrogen or the same or different alkyl groups having from 1 to 10 carbon atoms, which alkyl groups may be substituted themselves with lower alkoxy groups, comprising bringing together a 1,2-dithiol of the formula

$HSCHR^3CHR^4SH$

and an alpha-hydroxyketone of the formula

$R^1CHOHCOR^2$

wherein R^1, R^2, R^3 and R^4 are as above defined, whereby water is evolved and a dihydrodithiin of the said formula is produced.

4,319,034

NOVEL ORGANOCYCLOTETRASILOXANES

Masatoshi Arai, Annaka, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

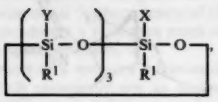
Filed Dec. 19, 1980, Ser. No. 218,122

Claims priority, application Japan, Dec. 24, 1979, 54-168924

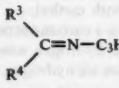
Int. Cl.³ C07F *7/10*

U.S. Cl. 556—425 **11 Claims**

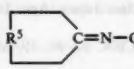
1. An organocyclotetrasiloxane represented by the general formula



in which Y is a hydrogen atom or a disubstituted aminoxy group of the formula $R^2_2N—O—$, R^2 being a monovalent hydrocarbon group having from 1 to 6 carbon atoms, X is a hydrocarbylideneimino-substituted propyl group of the formula



R^3 being a monovalent hydrocarbon group free from aliphatic unsaturation having from 1 to 8 carbon atoms and R^4 being a hydrogen atom or a monovalent hydrocarbon group free from aliphatic unsaturation having from 1 to 8 carbon atoms, or of the formula



R^5 being a divalent hydrocarbon group free from aliphatic unsaturation having from 4 to 8 carbon atoms, and R^1 is a monovalent hydrocarbon group having from 1 to 8 carbon atoms.

4,319,035

PROCESS FOR RECYCLING NOBLE METAL CATALYSTS USED FOR THE MANUFACTURE OF AROMATIC URETHANES

Franz Merger, Frankenthal, and Friedrich Towae, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 207,057

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1979, 2945961

Int. Cl.³ C07C *125/073, 125/065*

U.S. Cl. 560—25 **5 Claims**

1. In a process for the preparation of an aromatic urethane by the reaction in solution of an aromatic nitro compound or an aromatic amine and an oxidation agent with a hydroxyl compound and carbon monoxide, in the presence of a noble metal catalyst selected from the group consisting of palladium of chemical compounds thereof, the improvement which comprises

(a) treating a reaction solution of the urethane, containing the noble metal catalyst, with hydrogen after urethane formation is complete, and

(b) separating the noble metal catalyst, precipitated in its elementary form, from the urethane reaction solution.

4,319,036

CARBOALKOXY ALKYL NORBORNANES AND PROCESS FOR PREPARING SAME

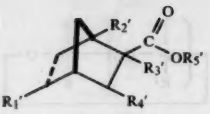
Philip T. Klemarczyk, Old Bridge; James M. Sanders, Eatontown; Manfred H. Vock, Locust; Frederick L. Schmitt, Holmdel, and Edward J. Granda, Englishtown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Mar. 25, 1980, Ser. No. 133,870

Int. Cl.³ C07C *69/753, 67/347*

U.S. Cl. 560—120 **3 Claims**

1. A compound having the structure:



wherein the dashed line represents a carbon-carbon single bond or a carbon-carbon double bond; R_1'; R_2', R_3' and R_4' are each selected from the group consisting of hydrogen and methyl and R_5' is C_1–C_4 alkyl with the proviso that:

1. one of R_1' and R_2' is methyl and the other of R_1' and R_2' is hydrogen;
2. R_3' and R_4' are not both methyl;
3. when the dashed line is a carbon-carbon double bond, R_1', R_3' and R_4' are not all hydrogen when R_2' is methyl and R_1', R_3' and R_4' are not all hydrogen when R_2' is methyl.

4,319,037

PROCESS FOR PRODUCING METHYL FORMATE

Mikio Yoneoka, Niigata, Japan, assignor to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 786,408, Apr. 11, 1977, abandoned. This application Aug. 31, 1978, Ser. No. 938,344

Claims priority, application Japan, Apr. 16, 1976, 51-43294; May 7, 1976, 51-51868

Int. Cl.³ C07C *67/40, 69/06*

U.S. Cl. 560—239 **13 Claims**

1. A process for producing methyl formate comprising dehydrogenating methanol in the vapor phase in the presence of a catalyst obtained by baking in air a mixture of (i) basic copper carbonate and (ii) at least one compound containing at least one element selected from the group consisting of an element of Group IIIA (including the rare earth elements) of the periodic table, an element of Group IVA of the periodic table and an actinide element, the atomic ratio of copper to said other element in said catalyst being from about 1.0:0.01 to about 1:2, followed by heating in a reducing atmosphere comprising hydrogen or carbon monoxide at a temperature sufficient to reduce and thereby to activate the catalyst.

4,319,038

PRODUCTION OF 1,1-DIACETOXYETHANE

Hans-Klaus Kübbeler, Swisttal; Heinz Erpenbach, Cologne; Klaus Gehrmann, Erftstadt, and George Kohl, Hürth, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 9, 1980, Ser. No. 195,480

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1979, 2941232

Int. Cl.³ C07C *67/36, 67/37, 69/16*

U.S. Cl. 560—232 **3 Claims**

1. A process for making 1,1-diacetoxyethane by reacting methyl acetate or dimethylether with carbon monoxide and hydrogen under anhydrous conditions, at temperatures of 350° to 575° K., under pressures of 1 to 300 bars, and in the presence of a catalyst system containing noble metals belonging to group VIII of the periodic system of the elements, or compounds thereof, and iodine or its compounds, which comprises: effecting the reaction in the presence of said catalyst system containing, as additional ingredients, an aliphatic carboxylic acid having 1 to 8 carbon atoms, a manganese or rhenium compound and a heterocyclic aromatic compound selected from the group consisting of N-methylpyridinium iodide; N,N-dimethylimidazolium iodide; N-methyl-3-picolinium iodide; N-methyl-2,4-lutidinium iodide; N-methyl-3,4-lutidinium iodide; N-methyl-quinolinium iodide; pyridinium acetate; N-methylimidazolium acetate; 3-picolinium acetate; 2,4-lutidinium acetate and 3,4-lutidinium acetate.

4,319,039

PREPARATION OF AMMONIUM SALT OF HYPOCHOLESTEREMIC FERMENTATION PRODUCT

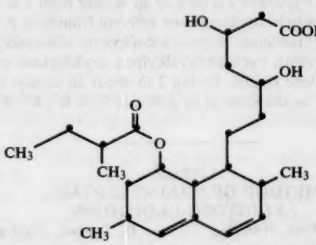
George Albers-Schonberg, Princeton, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 159,983, Jun. 16, 1980, which is a continuation-in-part of Ser. No. 114,459, Jan. 23, 1980, abandoned, which is a continuation-in-part of Ser. No. 48,946, Jun. 15, 1979, Pat. No. 4,231,938. This application Aug. 11, 1980, Ser. No. 176,816

Int. Cl.³ C07C *67/60, 69/30*

U.S. Cl. 560—256 **2 Claims**

1. A process for the isolation of the compound



II

as its ammonium salt from a fermentation broth obtained from the cultivation of microorganisms identified as *Aspergillus terreus* with Accession numbers ATCC 20541 and ATCC 20542 which comprises the steps of:

(a) acidifying whole broth;
(b) extracting with a water-immiscible, inert, organic solvent;
(c) extracting the organic solvent extract with aqueous alkali;
(d) acidifying the aqueous extract;
(e) extracting the aqueous extract with a water-immiscible, inert, organic solvent;
(f) drying the organic solvent extract; and
(g) treating the organic solvent extract with gaseous ammonia.

4,319,040

PROCESS FOR THE PRODUCTION OF OPTICALLY ACTIVE THREO-3-(3,4-DIHYDROXYPHENYL)SERINE

Naohito Ohashi, Nishinomiya; Shoji Nagata, Toyonaka; Kikuo Ioshizumi, Toyonaka, and Junki Katsube, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

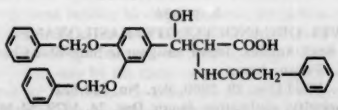
Filed Jul. 18, 1980, Ser. No. 170,152

Claims priority, application Japan, Aug. 20, 1979, 54-106483

Int. Cl.³ C07B *19/00*

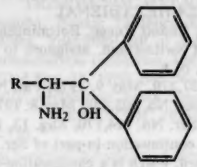
U.S. Cl. 562—401 **7 Claims**

1. A process for the production of optically active (D- or L-) threo-3-(3,4-dihydroxyphenyl)serine, which comprises subjecting racemic threo-3-(3,4-dibenzyloxyphenyl)-N-carbobenzyloxyserine of the formula:



(I)

to optical resolution by using as a resolving reagent an equimolar or less amount sufficient to provide optical resolution of an optically active amino acid alcohol derivative of the formula:



(II)

wherein R is methyl, isopropyl or isobutyl, in a solvent medium, separating the insoluble diastereomer salt, producing the optically active free acid therefrom by treatment with an aqueous mineral acid, and then subjecting the resulting optically active (D- or L-) threo-3-(3,4-dibenzyloxyphenyl)-N-carbobenzyloxyserine to hydrogenolysis.

4,319,041

METHOD OF PRODUCING HUMIC ACID

David W. Goff, 872 Bettino Ct., #412, Houston, Tex. 77024

Filed Sep. 18, 1980, Ser. No. 188,360
Int. Cl.³ C07C *65/04*
U.S. Cl. 562—475 **6 Claims**

1. The method of extracting humic acid from a source thereof, which comprises the steps of:
(a) placing a quantity of water into a mixing tank;
(b) adding a quantity of caustic soda to said water and mixing said soda with said water;
(c) adding a quantity of humic acid bearing ore in the form of fine powder to said water and said caustic soda contained in said tank to obtain a mixture having a pH range of 6.5 to 8.0;
(d) agitating said mixture for a time sufficient to substantially dissolve said ore in said mixture to obtain a liquid humic acid concentrate formed at ambient temperature; and
(e) monitoring the pH of said mixture and adding water in an amount to maintain the pH of said mixture in the range of 6.5 to 8.0.

4,319,042

PROCESS FOR PRODUCING METHACRYLIC ACID

Sargis Khoobiar, Kinnelon, N.J., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 972,745, Dec. 26, 1978, Pat. No. 4,252,682. This application Oct. 14, 1980, Ser. No. 196,807
Int. Cl.³ C07C *51/25, 57/055*
U.S. Cl. 562—535 **1 Claim**

1. A process for the preparation of methacrylic acid which comprises oxidizing methacrolein in the vapor-phase with molecular oxygen in the presence of a catalyst composition having the formula $Mo_aCu_bP_cSb_dCa_eO_f$ where a=12; b=0.05-3; c=0.1-5; d=0.01-3; e=0.1-6; f=value determined by the valence and proportions of the other elements of the formula.

4,319,043

PROCESS FOR THE PRODUCTION OF OXYGENATED ORGANIC COMPOUNDS

John Cook, and Peter M. Maitlis, both of Sheffield, England, assignors to University of Sheffield, Sheffield and BP Chemicals Limited, London, both of, England

Filed Mar. 26, 1980, Ser. No. 133,972
Claims priority, application United Kingdom, Mar. 28, 1979, 11196/79; Jun. 14, 1979, 20755/79
Int. Cl.³ C07C *27/22, 29/04, 41/05, 47/06*
U.S. Cl. 562—537 **14 Claims**

1. A process for the production of a product comprising an alkanol which process comprises contacting either
(i) a mercury compound having the formula:

$$(R^1OCHR^2CHR^3Hg)_nX \quad (I)$$

wherein X is an organic or inorganic anion, n is an integer having a value equal to the valency of the anion, R^2 and R^3 are independently a hydrogen atom or an alkyl group and R^1 is a hydrogen atom, or
(ii) the precursors of a mercury compound having the formula I, which precursors are an olefin of the formula $R^2CH{=}CHR^3$, and a soluble mercury compound
with an effective amount of a catalyst comprising a complex of a metal of Group VIII of the Periodic Table according to Mendeleef in the presence of water at a temperature of from 0+ to 300° C.

5. A process for the production of a product comprising a dialkyl ether which process comprises contacting either
(i) a mercury compound having the formula:

$$(R^1OCHR^2CHR^3Hg)_nX \quad (I)$$

wherein X is an organic or inorganic anion, n is an integer having a value equal to the valency of the anion, R^2 and R^3 are independently a hydrogen atom or an alkyl group and R^1 is an alkyl group or the group $(-CHR^2CHR^3Hg)_nX$, or
(ii) the precursors of a mercury compound having the formula I, which precursors are an olefin of the formula $R^2CH{=}CHR^3$, and a soluble mercury compound.
with an effective amount of a catalyst comprising a complex of a metal of Group VIII of the Periodic Table according to Mendeleef in the presence of an alkanol at a temperature of from 0° to 300° C.

4,319,044

PROCESS FOR RECOVERING USEFUL COMPONENTS FROM WASTE GAS OF METHIONINE SYNTHESIS

Genya Matsumoto; Munetaka Sakai; Shigeki Nakata, and Toshio Kawabata, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jan. 18, 1980, Ser. No. 113,316
Claims priority, application Japan, Jan. 25, 1979, 54-7852
Int. Cl.³ C07C *149/247*
U.S. Cl. 562—559 **7 Claims**

1. In a process for the production of methionine comprising the steps of reacting (1) methylmercaptopropionaldehyde or a combination of methyl mercaptan and acrolein, (2) hydrogen cyanide and (3) a compound selected from the group consisting essentially of ammonium carbonate and ammonium bicarbonate in a hydantoin synthesis reactor system to form a hydantoin and a waste gas, and hydrolyzing said hydantoin to form methionine, the improvement comprising recovering hydrogen cyanide by washing said waste gas generated in the hydantoin synthesis reactor, containing methyl mercaptan and hydrogen cyanide, with an aqueous solution of a compound selected from the group consisting essentially of ammonium carbonate and ammonium bicarbonate, which is the starting material of hydantoin synthesis and returning the washing to the hydantoin synthesis reactor system.

4,319,045

PROCESS FOR PRODUCTION OF A TARTRONIC ACID SOLUTION

Rupert B. Hurley, Williamsburg, Va., assignor to Badische Corporation, Williamsburg, Va.

Filed Mar. 5, 1981, Ser. No. 240,749
Int. Cl.³ C07C *59/245, 59/06*
U.S. Cl. 562—582 **7 Claims**

1. A process of producing a tartronic acid solution, comprising the steps of: p1 (a) converting a starting material into a salt, so that the resulting salt solution has a pH between 10 and 14, wherein the starting material is a member selected from a group consisting of maleic acid, fumaric acid, tartaric acid, maleic acid anhydride, tartaric acid anhydride, a water soluble ester of maleic acid, a water soluble ester of fumaric acid, a water soluble ester of tartaric acid;
(b) oxidizing the salt solution with aqueous $KMnO_4$ at a pH

of at least 10 and a temperature between the freezing point of the salt solution and 25° C., with the molar ratio of $KMnO_4$ to salt being between 1.5 and 2.5;

(c) removing a first precipitate from the oxidized salt solution;

(d) adding a water soluble salt to the solution until the precipitation of the oxalate and tartronate are complete, wherein the water soluble salt is a member selected from the group of water soluble salts whose oxalates and tartronates are insoluble in base, whose oxalates are insoluble in acid, and whose tartronates are soluble in acid;

(e) separating off a second precipitate resulting from the addition of the metal salt;

(f) dissolving the tartronate by adding a mineral acid to the second precipitate.

4,319,046

PREPARATION OF 1,2 DIAMINOBENZENE BY HIGH PRESSURE ACID HYDROLYSIS OF BENZEMIDAZOLONE

Lubomir Vacek, Toledo, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation of Ser. No. 818,173, Jul. 22, 1977, abandoned. This application Sep. 27, 1978, Ser. No. 946,284

Int. Cl.³ C07C *85/20*

U.S. Cl. 564—413 **12 Claims**

1. A process for preparing 1,2-diaminobenzene which comprises hydrolyzing 2-benzimidazolone in an acidic aqueous medium at temperatures above 190° C. and under pressures above atmospheric pressure to form the diaminobenzene.

4,319,047

PREPARATION OF BETA-METHYLTHIOPROPIONALDEHYDE

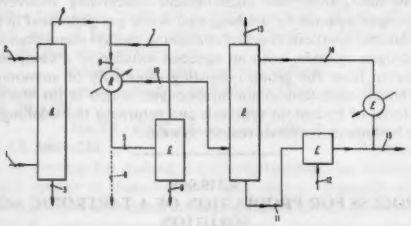
Yves Komorn, Tassin-la-Demi-Lune, and Ghislain Schwachhofer, Miribel, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jul. 2, 1980, Ser. No. 164,539

Claims priority, application France, Jul. 10, 1979, 79 17827

Int. Cl.³ C07C *151/00*

U.S. Cl. 568—41 **13 Claims**



1. In a process for the preparation of beta-methylthiopropionaldehyde which comprises (I) condensing a gaseous feedstream (i) comprising both acrolein and water to obtain an aqueous condensate (ii) containing a fraction of said acrolein and a gaseous acrolein effluent (iii) and (II) directly reacting said acrolein in said effluent (iii) with methylmercaptan to yield beta-methylthiopropionaldehyde, the improvement comprising partially vaporizing said aqueous condensate (ii) to obtain a gaseous phase (iv) comprising essentially all of said acrolein fraction in said condensate and a liquid phase (v) comprising essentially no acrolein, and recycling said gaseous phase (iv) into said gaseous feedstream (i) to be condensed.

4,319,048

CERTAIN 6-(3'-METHOXYPHENYL) DERIVATIVES OF 2,4-HEXADIENAL

Werner Bollag, Basel; Rudolf Ruegg, Bottmingen, and Gottlieb Ryser, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

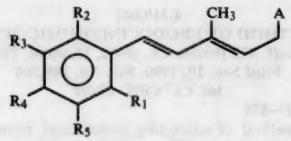
Division of Ser. No. 37,270, May 9, 1979, Pat. No. 4,224,244, which is a division of Ser. No. 903,438, May 8, 1978, abandoned, which is a division of Ser. No. 714,170, Aug. 13, 1976, Pat. No. 4,105,681, which is a continuation-in-part of Ser. No. 601,148, Aug. 1, 1975, abandoned, which is a continuation-in-part of Ser. No. 454,007, Mar. 22, 1974, abandoned. This application Jul. 30, 1980, Ser. No. 173,517

Claims priority, application Switzerland, Mar. 30, 1973, 4603/73; Feb. 2, 1975, 1547/75

Int. Cl.³ C07C *47/52*

U.S. Cl. 568—442 **1 Claim**

1. A compound of the formula:



wherein R_1 and R_2 are lower alkyl; R_3 is lower alkyl; R_4 is lower alkoxy; R_5 is hydrogen, lower alkyl, lower alkenyl or lower alkoxy; and A is oxo.

4,319,049

BIS HYDROXYMETHYL TRICYCLO (5,2,1,$0^{2,6}$) DECANE

Edgar R. Rogier, Minnetonka, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

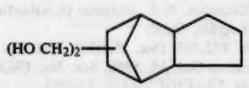
Filed Oct. 6, 1980, Ser. No. 194,172

Int. Cl.³ C07C *47/40, 31/00, 31/27*

U.S. Cl. 568—445 **4 Claims**

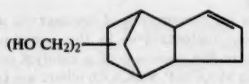
1. The present invention claims as a new composition of matter an 8,8(9,9)-bis(hydroxymethyl) tricyclo compound as shown below:

(IA)



and

(IB)



and mixtures thereof.

4,319,050

COPPER COMPLEX AS CATALYST FOR FORMATE ESTER DECARBONYLATION

Gerald Doyle, Whitehouse Station, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 13, 1981, Ser. No. 234,161

Int. Cl.³ C07C *41/01, 31/04*

U.S. Cl. 568—671 **16 Claims**

1. A process for the homogeneous catalytic decarbonylation of formate esters of the formula HCOOR where R is C_1–C_{10} aliphatic, C_7–C_{14} araliphatic or C_6–C_{10} aryl which comprises contacting the formate ester with a copper complex of the formula CU(L)X where L is CO, phosphine or phosphite and X is the anion of an acid in an inert atmosphere at temperatures of from about 100° to 300° C.

4,319,051

TRISPHENOL HYDRATE

Koreyoshi Suenobu, Buzen; Eizaburo Kaku, Kashihara, and Takanori Miura, Yoshitomi, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed Sep. 10, 1980, Ser. No. 185,852
Claims priority, application Japan, Sep. 10, 1979, 54-116361
Int. Cl.[3] C07C *39/16*
U.S. Cl. 568—720 2 Claims

1. 1,1,3-Tris(2-methyl-4-hydroxy-5-tert-butylphenyl)-butane trihydrate.

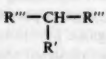
4,319,052

METHOD FOR PREPARING STERICALLY HINDERED BIS- OR POLYPHENOLS

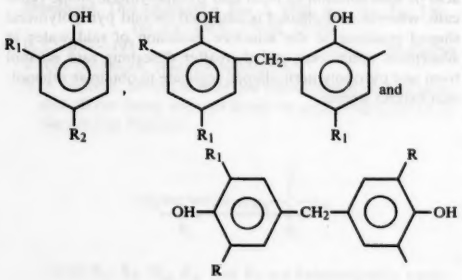
Evgeny L. Styskin, Khalturinskaya ulitsa 10, korpus 2, kv. 48; Yakov A. Gurvich, Sretensky bulvar, 6, kv. 61; Simona T. Kumok, Poklonnaya ulitsa, 4, kv. 32; Olga F. Starikova, Rublevskoe shosse, 89, korpus 2, kv. 52, all of Moscow; Grigory I. Rutman, Bashkirskaya ASSR, Revoljutsionnaya ulitsa, 7, kv. 6; Jury I. Michurov, Bashkirskaya ASSR, prospekt Lenina, 13, kv. 4, both of Sterlitamak; Vladimir A. Yanshevsky, ulitsa Kommunisticheskaya, 42, kv. 12, Novokuibyshevsk Kuibyshevskoi oblasti; Vladimir K. Gusev, ulitsa Utkina, 45a, kv. 55, Moscow, and Alexandr G. Liakumovich, ulitsa Galeeva, 10, kv. 8, Kazan, all of U.S.S.R.

Filed Aug. 5, 1977, Ser. No. 822,374
Int. Cl.[3] C07C *39/14*
U.S. Cl. 568—727 9 Claims

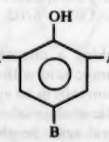
1. A method for preparing sterically hindered bis- or polyphenols of the formula:



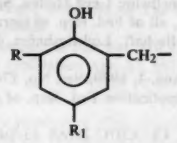
wherein R′ is selected from the group consisting of hydrogen and a C_1–C_4 alkyl; R″ and R‴ are the same or different and are selected from the group consisting of:



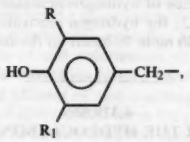
wherein R is a tertiary C_4–C_8 alkyl, R_1 and R_2 are the same or different and are selected from the group consisting of a C_1–C_8 alkyl, a C_6–C_8 cycloalkyl, a C_7–C_9 aralkyl, which comprises reacting a sterically hindered 2,4,6-trialkylphenol of the formula:



wherein A is selected from the group consisting of a C_1–C_8 alkyl, a C_6–C_8 cycloalkyl, a C_7–C_9 aralkyl and a 3,5-dialkyl-2-hydroxybenzyl of the formula:



B is selected from the group consisting of a C_1–C_8 alkyl, a C_6–C_8 cycloalkyl, a C_7–C_9 aralkyl and a 3,5-dialkyl-4-hydroxybenzyl of the formula:



wherein R and R_1 are as identified above, with acetals, aldehydes or donors of C_1–C_5 aldehydes in an acidic medium at a temperature ranging from 60° to 200° C. in the presence of an acidic catalyst, followed by isolation of the desired product.

4,319,053

PROCESS FOR THE PREPARATION OF 4,4′-DIHYDROXY-3,3′,5,5′-TETRAALKYL-DIPHENYLALKANES

Jürgen Heuser; Günther Jeromin; Hans-Helmut Schwarz, and Gerhard Friedhofen, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 714,786, Aug. 16, 1976, abandoned.
This application Oct. 11, 1977, Ser. No. 840,896
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1975, 2537027
Int. Cl.[3] C07C *39/16*
U.S. Cl. 568—727 8 Claims

1. A process for preparing 4,4′dihydroxy-3,3′,5,5′ tetraalkyldiphenylalkane which comprises reacting a 2,6-dialkyl phenol having from 1 to 4 carbon atoms in each alkyl moiety with a saturated aliphatic or cycloaliphatic ketone having from 3–12 carbon atoms at a molar ratio of 2,6-dialkylphenol to ketone of at least 2:1 and at a temperature of at least 50° C. in the presence of a catalytic amount of catalyst consisting of macroporous sulphonated polystyrene cross-linked with from 2 to 25% by weight of divinyl benzene and having an average pore diameter of at least 300 Å.

4,319,054

PROCESS FOR PRODUCING PYROGALLOL

Takao Maki, Fujisawa, and Kenji Murayama, Yokohama, both of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Dec. 8, 1980, Ser. No. 213,900
Claims priority, application Japan, Dec. 12, 1979, 54/161097; May 19, 1980, 55/66073; Jun. 17, 1980, 55/81946
Int. Cl.[3] C07C *37/06*
U.S. Cl. 568—772 20 Claims

1. A process for producing pyrogallol comprising subjecting cyclohexane-1,2,3-triol to dehydrogenation in the presence of a platinum group metal catalyst in an inert gas stream.

4,319,055

PROCESS FOR REMOVING FORMALDEHYDE FROM AQUEOUS SOLUTIONS OF BUT-2-YNE-1,4-DIOL

Walter Rebafka, Eppelheim; Gerd Heilen, Speyer, and Werner Fliege, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 1, 1980, Ser. No. 174,649

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931692

Int. Cl.[3] C07C *29/88, 33/046*

U.S. Cl. 568—856 7 Claims

1. In a process for removing formaldehyde from an aqueous solution of but-2-yne-1,4-diol by treating the solution with an alkaline agent at an elevated temperature, the improvement which comprises carrying out the treatment with said alkaline agent in the presence of hydrogen peroxide at a temperature from 50° to 150° C., the hydrogen peroxide being used in an amount of 80 to 120 mole % based on the formaldehyde to be removed.

4,319,056

PROCESS FOR THE HYDROCARBONYLATION OF METHANOL TO ETHANOL IN THE PRESENCE OF AN INERT LIQUID

Brian R. Gane, Weybridge, and David G. Stewart, Epsom, both of England, assignors to The British Petroleum Company Limited, London, England

Continuation of Ser. No. 957,700, Nov. 6, 1978, abandoned. This application Jan. 21, 1980, Ser. No. 113,614

Claims priority, application United Kingdom, Nov. 8, 1977, 46329/77

Int. Cl.[3] C07C *29/32, 29/36*

U.S. Cl. 568—902 11 Claims

1. A process for the production of ethanol which process comprises reacting, at elevated temperature and pressure, methanol with hydrogen and carbon monoxide in the presence of an aryl halide, a thiophene, or a silicone oil inert liquid which is deliberately charged to the reaction system, and a catalyst comprising cobalt, an iodide or a bromide and a compound having the formula

(I)

wherein X is nitrogen or phosphorus and A, B, and C are individually monovalent organic radicals, or X is phosphorus and any two of A, B, and C together form an organic divalent cyclic ring system bonded to the X atom, or X is nitrogen and all of A, B and C together form an organic trivalent cyclic ring system bonded to the X atom.

4,319,057

REGENERATION OF MOLECULAR SIEVES

Donald L. Kiser, Muscatine, Iowa, assignor to Grain Processing Corporation, Muscatine, Iowa

Filed Dec. 8, 1980, Ser. No. 214,197

Int. Cl.[3] C07C *31/08;* B01J *37/00*

U.S. Cl. 568—916 5 Claims

1. A process for regenerating crystalline zeolitic molecular sieves containing adsorbed water which comprises contacting the molecular sieves with methanol or acetone.

4. A process for removing water from water-containing ethanol which comprises passing the water-containing ethanol through a bed of molecular sieves until the water adsorbing capacity of the molecular sieve bed falls to a predetermined level, then passing methanol or acetone through said molecular sieve bed to restore the water adsorbing capacity, and then again passing water-containing ethanol through said molecular sieve bed.

4,319,058

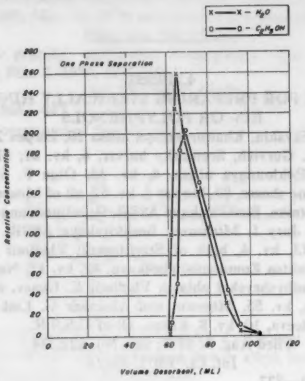
PROCESS FOR THE SEPARATION OF ETHANOL FROM WATER

Santi Kulprathipanja, Hoffman Estates, and Richard W. Neuzil, Downers Grove, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Oct. 10, 1980, Ser. No. 195,917

Int. Cl.[3] C07C *29/76*

U.S. Cl. 568—917 13 Claims



1. A process for separating ethanol from a feed mixture comprising ethanol and water which comprises contacting said mixture with an adsorbent consisting essentially of a shaped replication of particle aggregates prepared by treating an inorganic support with an organic pyropolymeric precursor, pyrolyzing said precursor at an elevated temperature ranging from about 400° C. to about 1200° C. to form a pyropolymer having at least a monolayer of recurring units containing at least carbon and hydrogen atoms on the surface of said inorganic support and thereafter leaching said inorganic support with an acid or base solution to form said pyropolymeric shape replicate, wherein said ethanol is adsorbed on said pyropolymeric shaped replicate to the selective exclusion of said water at adsorption conditions, and thereafter desorbing said ethanol from said pyropolymeric shaped replicate to obtain an ethanol-rich extract stream.

4,319,059

PREPARATION OF NITROALKANES

Nobuyuki Ishibe, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 27, 1980, Ser. No. 153,360

Int. Cl.[3] C07C *76/02, 79/04*

U.S. Cl. 568—947 9 Claims

1. A process for making a nitroalkane which comprises reacting an α-bromoalkanoic acid with an alkali metal nitrite in the presence of magnesium ions in an aprotic solvent for a time sufficient to form a cyclic chelate intermediate and thereafter neutralized with a mineral acid thereby to decarboxylate the alkanoic acid moiety in said chelate intermediate to obtain the nitroalkane.

4,319,060
PROCESS FOR PRODUCING 1,2-DICHLORO-1,1,2,2-TETRAFLUOROETHANE SUBSTANTIALLY FREE OF 1,1-DICHLORO-1,2,2,2-TETRAFLUOROETHANE

William J. Cunningham, Williamsville; Addison M. Smith, Buffalo, and Robert A. Wiles, Hamburg, all of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Dec. 8, 1980, Ser. No. 214,079
Int. Cl.[3] C07C *17/38*
U.S. Cl. 570—177 12 Claims

1. A process for producing 1,2-dichloro-1,1,2,2-tetrafluoroethane substantially free of 1,1-dichloro-1,2,2,2-tetrafluoroethane from a mixture comprising 1,2-dichloro-1,1,2,2-tetrafluoroethane and 1,1-dichloro-1,2,2,2-tetrafluoroethane, said process comprising contacting, in the vapor phase, a feed composition comprising a major amount of 1,2-dichloro-1,1,2,2-tetrafluoroethane and a minor amount of 1,1-dichloro-1,2,2,2-tetrafluoroethane with hydrogen in the presence of a hydrodechlorination catalyst for a selected time ranging from about 2–6 seconds; the proportion of hydrogen ranging from an amount at least slightly in excess, on a molar basis, of the concentration of 1,1-dichloro-1,2,2,2-tetrafluoroethane in said feed composition, to an amount about substantially equimolar to said feed composition; said contacting being carried out at a selected temperature suitable for the hydrodechlorination catalyst; whereby substantially all 1,1-dichloro-1,2,2,2-tetrafluoroethane is selectively degraded so as to provide 1,2-dichloro-1,1,2,2-tetrafluoroethane substantially free of 1,1-dichloro-1,2,2,2-tetrafluoroethane, as a product.

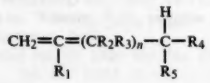
4,319,061
LOW MOLECULAR WEIGHT TERMINALLY-FUNCTIONAL SATURATED HYDROCARBON POLYMER

Gary Ver Strate, Matawan, N.J., and Francis P. Baldwin, Coupeville, Wash., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 849,539, Nov. 7, 1977, Pat. No. 4,278,822, which is a continuation of Ser. No. 642,294, Dec. 19, 1975, abandoned. This application Jan. 5, 1981, Ser. No. 222,320
Int. Cl.[3] C07C *17/28, 15/00*
U.S. Cl. 570—191 11 Claims

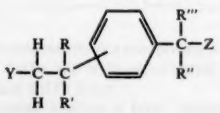
1. The polymeric reaction product of:

(a) a 1-alkene, having at least one trisubstituted carbon atom, said alkene being selected from the group represented by the general formula:



where R_1, R_2, R_3, R_4, and R_5 are independently hydrogen, alkyl, phenyl, alkyl phenyl or halophenyl and n is a number from 0 to 10 and

(b) a transfer agent selected from those represented by the general formula



where Y and Z are halogen and R, R′, R″ and R‴ are independently hydrogen, alkyl or phenyl and wherein said reaction product contains a saturated backbone, terminal functionality, and an M_n of about 500 to 5,000.

4,319,062
ALLYL CHLORIDE PROCESS

Theodore S. Boozalis; John B. Ivy, and Gordon G. Willis, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

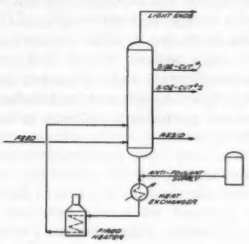
Continuation-in-part of Ser. No. 710,934, Aug. 2, 1976, abandoned. This application Apr. 17, 1978, Ser. No. 896,866
Int. Cl.[3] C07C *17/10*
U.S. Cl. 570—220 9 Claims

1. A process for producing allyl chloride which comprises combining the steps of (1) reacting chlorine with propylene at a temperature of from about 425° C. to 480° C. in order to produce a product a major portion of which is allyl chloride and in which by-product 1,2-dichloropropane constitutes more than 7 mole percent of said product, (2) separating allyl chloride from its higher boiling by-products, (3) subjecting at least a part of said higher boiling by-products to a low temperature chlorination with chlorine, (4) separating 1,2-dichloropropane from the products of said chlorination, (5) passing said 1,2-dichloropropane to a cracking furnace and (6) recovering allyl chloride from the effluent of said cracking furnace whereby the overall yield of allyl chloride from the process is increased and the formation of carbon from the thermal chlorination is essentially eliminated.

4,319,063
PROCESS AND COMPOSITIONS FOR REDUCING FOULING OF HEAT EXCHANGE SURFACES

Louis M. Dvoracek, Brea; Paul W. Fischer, Fullerton, and Milan Skripek, Fullerton, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 6, 1978, Ser. No. 958,164
Int. Cl.[3] C01G *9/12*
U.S. Cl. 585—4 25 Claims



1. A composition of matter useful as a foulant inhibitor in petroleum oils consisting essentially of between about 10 and 30 parts by weight of an oil-soluble N-alkylaminoalkylbenzene sulfonate, between about 20 and about 60 parts by weight of a heterocyclic amine selected from the group consisting of morpholine, pyridine, piperazine, and their methyl and ethyl derivatives, and between about 20 and about 60 parts by weight of phenylhydrazine.

8. A composition of matter useful as a foulant inhibitor in petroleum oils consisting essentially of a hydrocarbon solvent having dissolved therein a mixture of (i) between about 15 and about 25 parts by weight of an oil-soluble N-alkylamino-alkylbenzene sulfonate having a molecular weight between about 350 and 450 and in which the alkylamino group contains from 1 to about 12 carbon atoms and the alkyl group attached to the benzene nucleus contains from about 10 to about 20 carbon atoms, (ii) between about 30 and about 50 parts by weight of morpholine, and (iii) between about 30 and about 50 parts by weight of phenylhydrazine, said composition containing between about 30 and about 70 percent by weight of said mixture.

4,319,064

OLEFIN DIMERIZATION

Louis F. Heckelsberg; William T. Nelson; Sidney Schiff, and Ernest A. Zuech, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 21, 1980, Ser. No. 132,560
Int. Cl.[3] C07C *1/16*
U.S. Cl. 585—10 3 Claims

1. Tetra-n-alkylethylene having 28–44 carbon atoms per molecule the n-alkyl radicals being the same or different and having 4 to 13 carbon atoms.

4,319,065

METHOD FOR PREPARING SYNTHETIC HYDROCARBON FLUIDS

Richard G. Austin, Ridgewood, N.J.; David L. Beach, Gibsonia, and John P. Pellegrini, Jr., O'Hara Township, Allegheny County, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 3, 1980, Ser. No. 212,344
Int. Cl.[3] C07C *2/74, 2/02*
U.S. Cl. 585—255 18 Claims

1. A method for preparing a synthetic hydrocarbon fluid which comprises contacting an olefin reactant selected from 2-butene, an olefin having the formula $CH_2{=}CH{-}R$ wherein R is alkyl having from one to about ten carbon atoms, and mixtures thereof and a catalytic amount of the reaction product of tungsten hexafluoride and a branched-chain aliphatic alcohol wherein tungsten hexafluoride and the branched-chain aliphatic alcohol are reacted in a mol ratio of between about 1:1 and about 20:1.

4,319,066

PREPARATION OF ALKENYL AROMATIC COMPOUNDS

Louis J. Velenyi, Lyndhurst; Serge R. Dolhyj, Parma, and Andrew S. Krupa, Twinsburg, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Aug. 1, 1980, Ser. No. 174,463
Int. Cl.[3] C07C *1/00*
U.S. Cl. 585—437 10 Claims

1. A process for preparing an alkenyl aromatic compound, the process comprising contacting a corresponding alkyl aromatic carboxylic acid with a decarboxylation catalyst of the formula

$$M_aM'_bO_x \quad (I)$$

where

M is copper or a combination of copper and molybdenum;
M' is at least one of sodium, potassium, rubidium, cesium, chromium, phosphorus, a Group VIII metal, tin and bismuth;
a is a number of about 0.1 to 1;
b is a number of about 0.01 to 0.5; and
x is the number of oxygen atoms determined by the valence requirement of the other elements present.

4,319,067

METHOD FOR INCREASING THE ACTIVITY OF FRIEDEL-CRAFTS CATALYST

Russell L. Kreeger, Somerville, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jul. 31, 1980, Ser. No. 174,028
Int. Cl.[3] C07C *2/70, 5/22*
U.S. Cl. 585—459 11 Claims

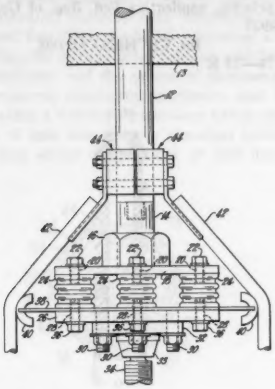
1. In the Friedel-Crafts alkylation or transalkylation reactions for the production of alkaryl compounds by the catalytic reaction of aromatic compounds with an alkyl halide having from 1 to 20 carbon atoms, alkene having from 2 to 20 carbon atoms or alkyne having from 2 to 20 carbon atoms in contact with the Friedel-Crafts catalyst comprising a metal halide and a hydrogen halide or alkyl halide having from 1 to 20 carbon atoms, the improvement of adding gaseous hydrogen halide to the liquid reaction mixture during at least a part of such reaction, said gaseous hydrogen halide being added at a mole ratio of gaseous hydrogen halide to said metal halide of at least 0.01:1.

4,319,068

APPARATUS FOR SUPPORTING AND INSULATING AN ELECTRODE

Michael Williamson, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 30, 1980, Ser. No. 154,689
Int. Cl.[3] C03B 5/02; H05B 3/06
U.S. Cl. 13—6 15 Claims



1. An apparatus for use with an electric furnace for supporting an electrode and insulating said electrode from an electrode jack associated therewith, said apparatus comprising:

(a) a top support member adapted to support an electrode;

(b) a bottom support member disposed below said top support member in parallel spaced relationship therewith and adapted to be attached to an electrode jack; and

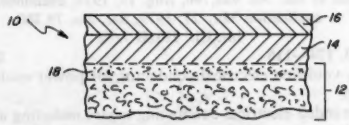
(c) a plurality of insulating members disposed between said top and bottom support members and being substantially equally spaced from the centerline of said electrode and substantially equally arcuately spaced from each other.

4,319,069

SEMICONDUCTOR DEVICES HAVING IMPROVED LOW-RESISTANCE CONTACTS TO p-TYPE CdTe, AND METHOD OF PREPARATION

Yuan-Sheng Tyan, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 25, 1980, Ser. No. 172,049
Int. Cl.[3] H01L 31/04, 31/18
U.S. Cl. 136—258 11 Claims



1. In a semiconductor device comprising a layer of polycrystalline p-type CdTe and a layer of metal in low-resistance contact with said CdTe layer,

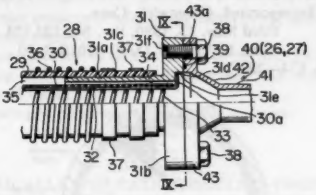
the improvement wherein a layer comprising tellurium is disposed between and in contact with said CdTe layer and said metal layer, and wherein the surface portion of said CdTe layer in contact with said tellurium layer is cadmium-deficient, with intact grain boundaries.

4,319,070

CURRENT SUPPLY CABLE FOR A HIGH FREQUENCY HEATING DEVICE

Teturo Imai, Numazu, and Mitsuru Kobari, Shizuoka, both of Japan, assignors to Kabushiki Kaisha Meidensha, Japan

Filed May 21, 1980, Ser. No. 152,120
Claims priority, application Japan, May 23, 1979, 54-63592
Int. Cl.[3] H01B 7/34; H02G 15/02; H05B 6/02
U.S. Cl. 174—15 WF 4 Claims



1. A current supply cable for a high frequency heating device adapted to be disposed between a connecting portion to a high frequency power supply unit and a connecting portion to a heating unit, comprising:

a cooling medium transmitting member formed from a flexible hose of insulating material;

a tubular flexible current conducting member disposed coaxially with and spaced from said cooling medium transmitting member such that an annular space is formed between the inner surface of said cooling medium transmitting member and the outer surface of said flexible current conducting member, which flexible current conducting member comprises a flexible tubular conductor formed of cylindrical braided wires disposed coaxially within said cooling medium transmitting member;

a connecting member mechanically connected at an end of said cooling medium transmitting member in a fluid-tight manner and including a metal fixture having a tubular portion connected to an end portion of said cooling medium transmitting member, a flange portion connected to an end of said tubular portion, and a series of tapered annular surfaces provided on the outer peripheral surface of said tubular portion engaged with an inner surface of said cooling medium transmitting member end portion, said flange portion of said connecting member having an inner end surface facing away from said tubular portion, an end of said tubular flexible current conducting member being fixed to said end surface, said connecting member further including means for fastening said connecting member to a current supply conductor member for conducting a high frequency current from said high frequency power supply unit to said heating unit;

a flexible protecting tube which is constituted by cylindrically braided insulating material provided over the outer peripheral surface of said flexible current conducting member;

a supporting member mounted within said flexible current conducting member for urging said flexible current conducting member into contact with said flexible protecting tube;

means mounted over the outer surface of said cooling medium transmitting member for clamping said cooling medium transmitting member to said connecting member in a fluid-tight manner, said clamping means comprising a clamping band disposed around the outer peripheral surface of said end portion of said cooling medium transmitting member urging said cooling medium transmitting member against said series of tapered annular surfaces provided on the outer peripheral surface of said tubular portion of said connecting member; and

a protecting member mounted over the outer surface of said cooling medium transmitting member for protecting said

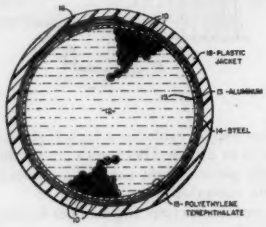
cooling medium transmitting member, said protecting member comprising a helical spring coaxial with and secured to the outer surface of said cooling medium transmitting member.

4,319,071

WATERPROOF MULTI-PAIR TELEPHONE CABLE WITH IMPROVED FILLING COMPOUND

Gertraud A. Schmidt, Red Bank, N.J., assignor to GK Technologies, Incorporated, Greenwich, Conn.

Filed Mar. 13, 1980, Ser. No. 121,724
Int. Cl.[3] H02G *15/20;* H01B *3/30*
U.S. Cl. 174—23 C 10 Claims



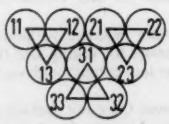
1. In a high pair count telephone cable with small insulated conductors comprising the cable core including in combination a waterproof filler compound based on paraffinic type oil, the improvement in which the paraffinic type oil has a Saybolt Universal viscosity of approximately 2500–3500 seconds at 37.8° C., the paraffinic oil being 100 parts of the filler, and in which the remainder of the filler compund comprises approximately 5 to 10 parts of polyethylene mixed with ingredients from the group consisting of polyisobutylene, and a copolymer of polyisobutylene and isoprene, the filler compound being tacky at temperatures from −40° C. and having a drip point in excess of 71° C., and the filler compound being soft enough to withstand the telephone wire bend test at a temperature of approximately −40° C.

4,319,072

CABLE CONSISTING OF THREE BUNDLES EACH HAVING THREE STRANDS

Wilhelm Wilhelm, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 13, 1980, Ser. No. 177,623
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939171
Int. Cl.[3] H01B *11/04*
U.S. Cl. 174—34 3 Claims



1. A cable consisting of: three bundles each including three strands, all of said strands arranged within a trapezoid, in each case after identical periodically recurring longitudinal sections the first, second and third bundles are displaced by 60° in the same direction of rotation with said second and third bundles so displaced within a first longitudinal section, said first and second bundles so displaced within the following longitudinal section, and said third and first bundles so displaced within a third longitudinal section.

4,319,073

PUSH-ON END TERMINATION FOR SHIELDED POWER CABLE CONDUCTORS OF SECTOR-SHAPED CONDUCTOR CROSS SECTION

Klaus Kretschmer, and Peter Tuschy, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 16, 1980, Ser. No. 112,691
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2904955
Int. Cl.[3] H02G *15/068*
U.S. Cl. 174—73 R 3 Claims

1. A prefabricated push-on end termination for a plastic insulated power cable conductor of sector-shaped cross section of predetermined outside circumference and having an outer conducting layer, comprising:

(a) a silicone rubber insulating part which has a circular longitudinal bore and in which a deflector of electrically conducting silicone rubber is embedded, said silicone rubber insulating part being made of commercial silicone rubber having a Shore A hardness of 35 max., and preferably less than or equal to 30;

(b) the circumference of the circular inside bore of the insulating part being smaller by at least 16% than the outside circumference of the cable conductor with which such termination is to be used stripped of the outer conducting layer; and

(c) the wall of the insulating part being cylindrical or nearly cylindrical in the area of the deflector, and having, in said area, a wall thickness including the wall thickness of the deflector, of less than 15 mm.

4,319,074

VOID-FREE ELECTRICAL CONDUCTOR FOR POWER CABLES AND PROCESS FOR MAKING SAME

Ruth E. Yaste, Lawrence, Kans., and Russell B. Budrow, Oxford, Conn., assignors to TRW Inc., Cleveland, Ohio

Division of Ser. No. 933,796, Aug. 15, 1978, abandoned. This application May 27, 1979, Ser. No. 79,280
Int. Cl.[3] H01B *7/02*
U.S. Cl. 174—116 2 Claims

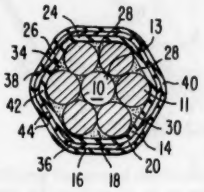
1. A void-free electrical conductor for power cables comprising:

(a) a stranded electrical conducting means including a central conducting member and a plurality of peripheral conducting members located therearound and in abutment with adjacent peripheral conducting members, said central conducting member including a void-free central insulation filling the cross-sectional area around said central conducting member outwardly to the abutment points between adjacent peripheral conducting members;

(b) a first primary electrical insulation being a tape helically wound and heat shrunk about the exterior of said stranded electrical conductor means to form a void-free external layer

of primary electrical insulation therearound, said first primary insulation being initially applied about said stranded electrical conductor means as a tape overwrap and heat shrunk to form a void-free insulating layer therearound, said first primary electrical insulation having a melting temperature and a heat shrink temperature both above the melting temperature of said central insulation; and

(c) a first filler insulation together with said central insulation filling all interstices between said peripheral conducting members, said first filler insulation providing a void-free insulation filling the interior space between said first primary electrical insulation and the points of abutment between adjacent peripheral conducting members, said first filler insulation having a melting temperature below the melting temperature of said first primary electrical insulation and below the heat shrink temperature of said first primary



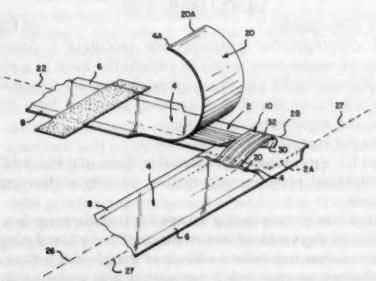
electrical insulation, said first filler insulation being initially applied about said stranded electrical conductor as a tape overwrap layer underneath the tape overwrap layer for said first primary insulation, said first filler insulation and said central insulation being bonded together at an interface at substantially the points of abutment between adjacent peripheral conducting members and being completely void-free to prevent any flow of fluids axially through the void-free electrical conductor, the tape overwrap layer of said first filler insulation and the central insulation both being responsive to heat that is sufficient to heat shrink said first primary insulation to flow into the interstices between said peripheral conducting members and central conducting member and be subjected to radial constriction to form a void-free insulation simultaneously with the heat shrinking of said first primary electrical insulation.

4,319,075

SEALED ROUTING OF UNDERCARPET CABLE

Albert D. Willette, Pfafftown, N.C., assignor to AMP Inc., Harrisburg, Pa.

Filed Jan. 26, 1981, Ser. No. 228,644
Int. Cl.³ H01R *43/00*; H02G *3/26*
U.S. Cl. 174—117 FF **4 Claims**



3. An angle turn in an assembly of a flat cable enclosed together with a metal shield layer in a sealed envelope, comprising:

side margins of said envelope having openings therein,

said envelope being transversely severed through defining free end sections,

said metal shield being transversely severed through defining free end sections thereof,

said cable having a first creased fold and a second creased fold defining stacked sections of said cable overlying one another,

said free end sections of said metal shield being interleaved and joined together,

said free end sections of said envelope being interleaved and covering said sections of said cable and said sections of said metal shield, and

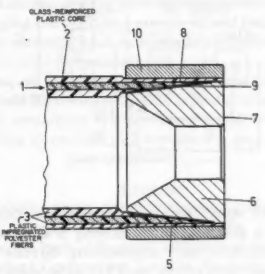
means sealing said openings in said side margins.

4,319,076

ELECTRICALLY INSULATIVE HOLLOW-PROFILE STRUCTURAL PART WITH HIGH-TENSION ATTACHING ELEMENTS AND METHOD OF CONSTRUCTING SAME

Armin Piur, Spreitenbach, Switzerland, assignor to Micafil Aktiengesellschaft, Zurich, Switzerland

Filed Sep. 5, 1979, Ser. No. 72,623
Int. Cl.³ H01B *17/00*
U.S. Cl. 174—178 **13 Claims**



1. An electrically insulative hollow-profile structural part having ends with high-tension attaching elements fastened thereto, for use in SF_6 insulating gas environments, comprising:

a hollow glass-reinforced plastic core;

a protective cover which is resistant to separation products of SF_6 insulating gas disposed over the surfaces of said hollow glass-reinforced plastic core that would be contacted by SF_6 insulating gas in the absence of the protective cover, each end of the covered core having a conical surface formed in part by said hollow glass-reinforced plastic core and in part by said protective cover; and,

high-tension attaching elements, for each of said ends, with conical surfaces facing opposite the conical surfaces on the ends of the covered core, the high-tension attaching elements being disposed on the conical surfaces on the ends of the covered core in such a way that the conical surfaces on the ends of said covered core are covered gastight by the conical surfaces of the high-tension attaching elements and are tensionally connected thereto.

13. A method of constructing an electrically insulative, hollow-profile structural part having an end with a high-tension attaching element fastened thereto, for use in SF_6 insulating gas environments, comprising the steps of:

forming a hollow glass-reinforced plastic core with at least one end face;

covering surfaces of the hollow glass-reinforced plastic core to be exposed to SF_6 insulating gas during use with a

protective cover of an electrically insulative material which is resistant to separation products of SF_6 insulating gas, said protective cover being applied to said hollow glass-reinforced plastic core in such a manner as to leave said end face of said hollow glass-reinforced plastic core exposed;

shaping the end of the covered core so as to provide a conical surface extending across the hollow glass-reinforced plastic core and the protective cover and thereby increase the surface area of exposure of said hollow glass-reinforced plastic core and said protective cover; and

securing a high-tension attaching element having a conical surface facing oppositely to the conical surface of the covered core to the conical surface of the covered core with a gas-tight connection between said conical surfaces.

4,319,077

CIRCUIT FOR CODED SYMBOL CONVERSION

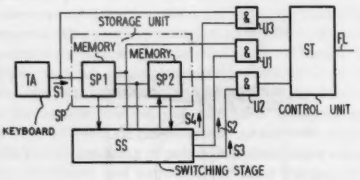
Wolfgang Wiesner, Germering, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 24, 1980, Ser. No. 172,074

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1979, 2937725

Int. Cl.³ G06F *3/14*; H04L *13/08*

U.S. Cl. 178—17 C **9 Claims**



1. A circuit for converting input signals into coded characters for use in a printing station having a keyboard with a plurality of actuatable keys representing directly and non-directly transmissible symbols, each key generating a different one of said input signals upon actuation thereof, said circuit comprising:

a first memory having an input connected to said keyboard and having stored therein a plurality of addressable binary data words for said symbols, each data word having a plurality of binary locations,

with data words for said directly transmissible symbols containing a coded character for one of said directly transmissible symbols, and data words for said non-directly transmissible symbols containing an address word;

a second memory connected to said first memory having a plurality of address locations corresponding to said address words in said first memory, said second memory storing at said address locations a plurality of additional data words each containing at least one coded character for representing one of said non-directly transmissible symbols;

a switching stage connected to each of said first and second memories;

a control unit interconnected between each of said switching stage, said first memory, said second memory and a data trunk line,

said switching stage generating an enabling signal for enabling transmission of the output of said first memory through said control unit to said data trunk line if a key is actuated representing a directly transmissible symbol, and for enabling transmission of the output of said second memory through said control unit to said data trunk line if a key is actuated representing a non-directly transmissible symbol.

4,319,078

APPARATUS FOR DETECTING X AND Y COORDINATES OF INPUT POINTS

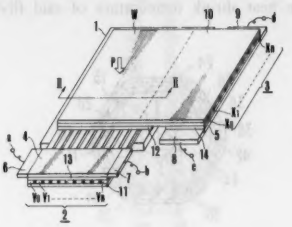
Kenta Yokoo, Yokohama; Tomio Kishimoto, and Yuichi Sato, both of Yokosuka, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Mar. 11, 1980, Ser. No. 129,363

Claims priority, application Japan, Apr. 2, 1979, 54-38410; Dec. 18, 1979, 54-163614

Int. Cl.³ G08C *21/00*

U.S. Cl. 178—18 **10 Claims**



1. In an apparatus for detecting X and Y coordinates of input points comprising an input surface including a first parallel electrode group and a second, flexible parallel electrode group opposing and intersecting the first parallel electrode group, a first resistor being in electrical contact with electrode conductors of the first parallel electrode group at one end thereof, a second resistor being in electrical contact with electrode conductors of the second parallel electrde group at one end thereof, and electrical detection means for detecting the input position on the input surface by using electrical signals generated from the first and second resistors, the improvement which comprises a pressure conductive rubber sheet interposed between the first and second parallel electrode groups, said sheet being rendered conductive upon application of pressure to the input surface, and means provided in said electrical detection means for detecting currents flowing through said first and said second resistors,

whereby said X and Y coordinates of input points are detected by measuring said currents flowing through said first and second resistors.

4,319,079

CRYPTO MICROPROCESSOR USING BLOCK CIPHER

Robert M. Best, 16016 - 9th Ave. NE., Seattle, Wash. 98155

Continuation-in-part of Ser. No. 75,120, Sep. 13, 1979, abandoned. This application Jan. 17, 1980, Ser. No. 113,071

Int. Cl.³ H04L *9/00*

U.S. Cl. 178—22.09 **16 Claims**

1. A cryptographic apparatus for executing a computer program of instructions stored in enciphered form as a plurality of addressable blocks of enciphered program information, each block being stored at a location specified by a digital address, the apparatus comprising:

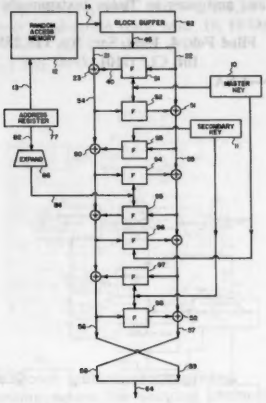
means for storing an encryption key;

means for specifying a first digital address of a block of said enciphered program information, thereby addressing the block;

product block deciphering means for transforming in a plurality of steps said addressed block of enciphered program information to produce a block of deciphered information including an executable instruction and a second digital address, at least one step in said plurality of steps being controlled by said first digital address, and at least one step

in said plurality of steps being controlled by said encryption key;

means for decoding and executing an instruction included in a block of said deciphered information; and



means for specifying the second digital address in said block of deciphered information so as to address a successor block of said enciphered program information which includes a successor instruction in enciphered form for deciphering by said deciphering means.

4,319,080

METHOD OF LOCATING FAULTY PULSE REPEATERS

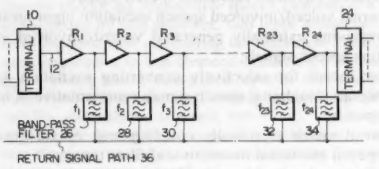
Kiyoshi Kuwahara, Tokyo, Japan, assignor to Anritsu Electric Company Limited, Tokyo, Japan

Filed Mar. 11, 1980, Ser. No. 129,201

Claims priority, application Japan, Mar. 13, 1979, 54-28188

Int. Cl.³ H04B *3/46, 1/60*

U.S. Cl. 179—175.31 R **4 Claims**



1. A method of locating a defectively functioning one of a plurality of pulse repeaters arrayed along a transmission line, each of said repeaters being provided with a band-pass filter coupled to an output terminal thereof for passing a supervisory signal having a supervisory frequency which is individual to said repeater, comprising the steps of:

applying to one end of said transmission line a test signal consisting of successively generated pulse train groups G_1 to G_n, each of said pulse train groups containing a frequency component equal to one of said supervisory frequencies, said pulse train groups G_1 to G_n being composed of corresponding subgroups (a_1, b_1, $-h_1$; a_2, b_2, $-h_2$, $-a_n$, b_n, $-h_n$ with each of said subgroups constituting a pulse train group being composed of a plurality of bipolar pulse pairs and a plurality of pulse trains, with the density of said pulse trains in successive ones of said subgroups in a pulse train group being varied in a stepwise manner, periodic alternation of the polarity of said pulse trains being performed to provide said supervisory frequency component in said pulse train group, and a fault locating reference signal inserted between adjacent ones of said pulse train groups G_1 to G_n;

measuring the level of an output signal from a band-pass filter of a first one of said repeaters when said fault locating reference signal is being applied to said first repeater, and memorizing said level;

measuring the level of a supervisory signal output from said band-pass filter of said first repeater when a first subgroup of a pulse train group containing a supervisory frequency corresponding to said first repeater is applied to said first repeater, and memorizing said level;

subtracting said output signal level from said supervisory signal level to produce a first level difference;

comparing said first level difference with a predetermined level difference reference value, and adjudging said first repeater to be operational if said first level difference is found to be within a predetermined range with respect to said level difference reference value and adjudging said first repeater to be non-operational if said first level difference is found to be outside said predetermined range;

successively measuring the level of supervisory signal output from said band-pass filter of said first repeater while each of said subgroups of said pulse train group subsequent to said first subgroup is being applied to said first repeater, measuring the level difference between each of said measured levels of supervisory signal and a level of a selected one of said subgroups, said level of said selected one of said subgroups serving as a reference output level, comparing each successive level difference thus measured with a corresponding level difference reference value, and adjudging the operating margin of said first repeater based on the results of said successive comparisons of said successive level differences; and

repetition of the above-mentioned steps for each of said repeaters following said first repeater when a pulse train group containing a supervisory signal frequency corresponding to each of said repeaters is applied thereto.

4,319,081

SOUND LEVEL MONITORING APPARATUS

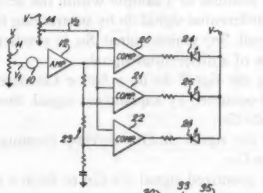
Michael C. Martin, Kingston upon Thames, and Ian R. Summers, Exeter, both of England, assignors to National Research Development Corporation, London, England

Filed Sep. 11, 1979, Ser. No. 74,767

Claims priority, application United Kingdom, Sep. 13, 1978, 36644/78

Int. Cl.³ H04R *25/00;* **G01D** *7/00*

U.S. Cl. 179—1 MN **5 Claims**



1. A method of monitoring the level of ambient sound for a deaf person including the steps of providing adjacent a deaf person apparatus comprising a microphone, a discriminator and a sensory transducer;

selecting and setting in unison a plurality of ambient sound level thresholds which successively differ by 10–20 dB in the discriminator, the lowest ambient sound level thresh-

old in the discriminator representing that of normal speech;

coupling sound signals from the microphone to the discriminator, the discriminator functioning to provide output signals corresponding to a plurality of predetermined sound level thresholds as the ambient sound detected by the microphone reaches levels corresponding to the thresholds;

and coupling the discriminator output signal to the sensory transducer and operating the sensory transducer, so that the sensory transducer provides for the deaf person indications of the ambient sound level in his vicinity as a guide to the speech volume required on his part.

4,319,082

ADAPTIVE PREDICTION DIFFERENTIAL-PCM TRANSMISSION METHOD AND CIRCUIT USING FILTERING BY SUB-BANDS AND SPECTRAL ANALYSIS

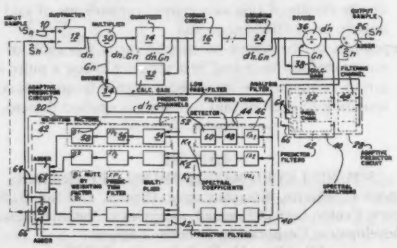
André Gilloire, 7, rue Yann Peron, and Jean Zurcher, 10, rue du Dauphine, both of 22300 Lannion, France

Filed Dec. 14, 1979, Ser. No. 103,582

Claims priority, application France, Dec. 28, 1978, 78 36709

Int. Cl.³ G10L *1/00*

U.S. Cl. 179—1 SA **8 Claims**



1. A transmission method of the adaptive prediction differential-PCM type comprising (a) a coding operation comprising the steps of:

providing a series of samples Sn, where n designates the order or position of a sample within the series;

forming a differential signal dn by subtracting from a sample Sn a signal Sn, which signal Sn is predicted from the evolution of a differential signal;

multiplying the signal dn by a factor Gn determined from the level occupied by a quantized signal, thereby forming a signal dn.Gn;

quantizing the signal dn.Gn, thereby forming a quantized signal d'n.Gn;

coding the quantized signal d'n.Gn to form a coded signal; and

(b) a decoding operation comprising the steps of:

decoding the coded signal to form a quantized signal d'n.Gn;

dividing the quantized signal d'n.Gn by a factor Gn determined from the quantized signal, thereby forming a signal d'n; and

forming an aggregate signal S'n by adding the signal d'n to a signal $\hat{S}n$, which signal $\hat{S}n$ is predicted from the evolution of an aggregate signal; wherein each prediction is carried out in adjacent frequency bands on as many signals as are obtained by weighting a quantized signal by coefficients obtained from a spectral analysis in the bands of a quantized signal.

4,319,083

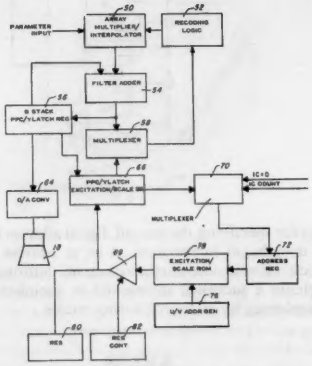
INTEGRATED SPEECH SYNTHESIS CIRCUIT WITH INTERNAL AND EXTERNAL EXCITATION CAPABILITIES

Richard H. Wiggins, Dallas, and Alva E. Henderson, Lubbock, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 4, 1980, Ser. No. 118,255

Int. Cl.³ G10L *1/00*

U.S. Cl. 179—1 SA **6 Claims**



1. A speech synthesis system comprising:

voiced/unvoiced speech excitation means for generating voiced/unvoiced excitation speech signals;

external voiced/unvoiced speech excitation input means for receiving externally generated voiced/unvoiced excitation speech signals;

filter means for selectively converting excitation speech signals into digital speech signals representative of human speech;

control means electrically coupling said voiced/unvoiced speech excitation means to said filter means;

said external voiced/unvoiced speech excitation input means being directly electrically coupled to said filter means;

control signal input means operatively associated with said control means for receiving an external control signal;

said control means being deactivated in response to reception of the external control signal by said control signal input means and communication thereof to said control means for electrically uncoupling said voiced/unvoiced speech excitation means from said filter means;

said external voiced/unvoiced speech excitation input means being adapted to be used for providing external voiced-/unvoiced excitation speech signals to said filter means during the time period when said voiced/unvoiced speech excitation means is electrically uncoupled from said filter means;

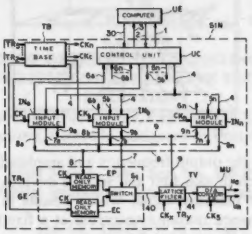
digital-to-analog converter means coupled to said filter means for converting said digital speech signals representative of human speech into analog signals; and

audio means coupled to said digital-to-analog converter means for converting said analog signals into audible sounds.

4,319,084
MULTICHANNEL DIGITAL SPEECH SYNTHESIZER

Paolo Lucchini, Udine, and Luciano Nebbia, Turin, both of Italy, assignors to CSELT, Centro Studi e Laboratori Telecomunicazioni S.p.A, Turin, Italy

Filed Mar. 14, 1980, Ser. No. 130,397
Claims priority, application Italy, Mar. 15, 1979, 67543 A/79
Int. Cl.[3] G10L 1/00
U.S. Cl. 179—1 SM 10 Claims



1. A digital speech synthesizer comprising:

pulse-generating means for emitting excitation pulses of varying amplitudes and polarities;

a lattice filter operatively connected to said pulse-generating means for producing digital speech samples in response to said excitation pulses;

a digit-to-analog converter at an output of said filter for translating said samples into voice signals;

a programmed source of stored sets of processing parameters transmittable, in a predetermined sequence of sets, to said pulse-generating means for commanding the emission of said excitation pulses and to said filter for controlling the processing of said excitation pulses thereby, said parameters encoding information relating to frequency distribution, volume and duration of speech elements;

input means operatively connected to said pulse-generating means, to said filter and to said source for facilitating the transmission of consecutive sets of said sequence from said source to said pulse-generating means and to said filter, thereby producing consecutive speech elements of a voice signal coded by said sequence, said input means including counting means for controlling the respective durations of said consecutive speech elements according to settings for said counting means transmitted together with said parameters from said source, said setting establishing different validity intervals for said sets; and

timing means operatively connected to said input means, to said filter and to said pulse-generating means for correlating the operations thereof.

4,319,085
SPEECH RECOGNITION APPARATUS AND METHOD

John R. Welch, Riverton, and Marvin B. Herscher, Cherry Hill, both of N.J., assignors to Threshold Technology Inc., Delran, N.J.

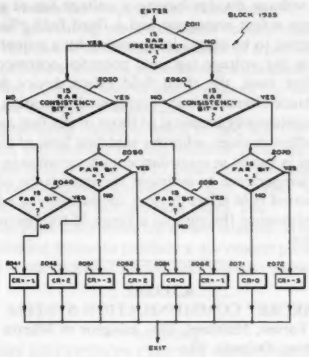
Filed Apr. 8, 1980, Ser. No. 138,646
Int. Cl.[3] G10L 1/00
U.S. Cl. 179—1 SD 24 Claims

1. Apparatus which receives input spoken vocabulary words during a training phase of operation and subsequently recognizes received input spoken command words, comprising:

feature extraction means for processing received input words and generating digital feature signals dependent upon the features present in said input words;

means for forming, for each vocabulary word, a time dependent reference array having digital information at each array position representative of the presence or absence of a particular feature signal at a particular time slot during at least a predetermined fraction of a number of training utterances of said vocabulary word and also representative of the consistency of occurrence of said particular feature signal at said particular time slot during said number of training utterances of said vocabulary word;

means for forming a time dependent command word feature array having digital information at each array position representative of the presence or absence of a particular feature signal at a particular time slot during a command word candidate;



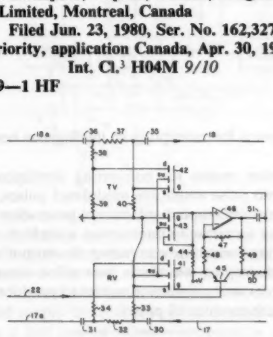
means for comparing, member-by-member, the command word feature array with the reference array for each vocabulary word; and

means for selecting the vocabulary word those reference array yields the highest correlation with said command word feature array.

4,319,086
VOICE SWITCH FOR HANDS FREE COMMUNICATION APPARATUS

James L. E. Thompson, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 23, 1980, Ser. No. 162,327
Claims priority, application Canada, Apr. 30, 1980, 350901
Int. Cl.[3] H04M 9/10
U.S. Cl. 179—1 HF 6 Claims



1. A voice switch circuit for providing hands free transmit and receive modes of operation in a communication apparatus wherein the communication apparatus includes a microphone circuit, a loudspeaker circuit, a transmit signal path for passing a.c. signals from the microphone circuit to an output, a receive signal path for passing a.c. signals from an input to the loudspeaker circuit, and a control circuit for generating a control signal having first and second signal states corresponding to the modes of operation for controlling the voice switch circuit, in response to the a.c. signals in the microphone circuit and the a.c. signals in the loudspeaker circuit, the voice switch circuit comprising:

a first field effect device connected to conduct a.c. signals in

accordance with a control voltage to provide a variable attenuation function in said transmit signal path, a second field effect device connected to conduct a.c. signals in accordance with the control voltage to provide a variable attenuation function in said receive signal path each of said field effect devices having substantially identical impedance characteristics;

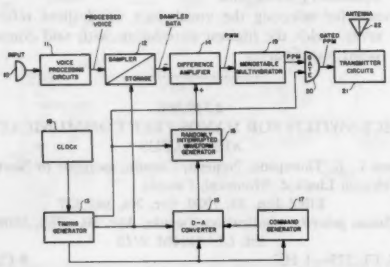
means for generating said control voltage having first and second limits in response to said control signal, and including a voltage divider having a voltage tap at a junction between a first resistance and a third field effect device connected to be biased in operation by a potential developed at the voltage tap, said potential corresponding to said first limit, the third field effect device having an impedance characteristic varying with operating temperature substantially identical to those of the first and second field effect devices, whereby said first limit of the control voltage is varied in accordance with variation in the operating temperature to maintain the impedance of the first and second field effect devices substantially at a threshold of conductance throughout a range of the operating temperature.

4,319,087

SECRET COMMUNICATION SYSTEM

Spyros G. Varsos, Maitland, Fla., assignor to Martin Marietta Corporation, Orlando, Fla.

Filed Sep. 30, 1966, Ser. No. 583,288
Int. Cl.[3] H04K *1/00*
U.S. Cl. 179—1.5 R **13 Claims**



1. An apparatus for encrypting an intelligence bearing signal comprising:

(a) conversion means for converting intelligence bearing signals into pulse amplitude modulated pulses;

(b) randomly interrupted waveform generation means for generating a randomly interrupted waveform; and

(c) comparing means for comparing the output of said randomly interrupted waveform generation means with the output from said conversion means to produce encrypted pulse width modulated pulses.

4,319,088

METHOD AND APPARATUS FOR MASKING SOUND

Steven J. Orfield, Minneapolis, Minn., assignor to Commercial Interiors, Inc., Minneapolis, Minn.

Filed Nov. 1, 1979, Ser. No. 90,476
Int. Cl.[3] H04K *3/00*; H03R *3/00*
U.S. Cl. 179—1.5 M **8 Claims**

1. A method for masking sound in particular zones of an interior space comprising the steps of:

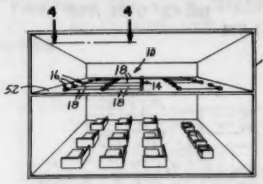
(a) monitoring the ambient noise of said space;

(b) measuring the characteristic frequencies and amplitudes of said noise;

(c) establishing zones defined by areas contiguous of similar ambient noise characteristics;

(d) mounting a first device for producing a sound masking output centrally within each of said zones;

(e) mounting second devices for producing a sound masking output which is driven by the first device adjacent each of said first devices; and



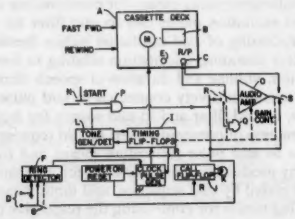
(f) adjusting the output frequency and amplitude characteristics of each of said first and second devices to produce a composite masking signal which results in a voice frequency shaped masking spectrum at a fixed height from the ground throughout the zone.

4,319,089

TELEPHONE ANSWERING MACHINE

Stanley F. Miller, Rocky Point, N.Y., assignor to Quasar Microsystems, Inc., Brentwood, N.Y.

Continuation of Ser. No. 957,649, Nov. 3, 1978, abandoned. This application Jul. 7, 1980, Ser. No. 166,164
Int. Cl.[3] H04M *1/64*
U.S. Cl. 179—6.06 **7 Claims**



1. A telephone answering machine utilizing a single magnetic tape having a plurality of announcement information sections interleaved with a corresponding plurality of message information sections, said machine comprising:

a single magnetic record/playback head;

tape transport means;

means comprising said magnetic record/playback head for recording a desired announcement seriatim on each of said announcement information sections of a single track on said tape, and for recording on said track a stop tone immediately preceding each of said sections and a transfer tone immediately following each corresponding section;

announcement control means coupled to said transport means, including said record/playback head and responsive to a telephone ring signal for reproducing said announcement from one of said announcement information sections as a first audio signal;

means for coupling said first audio signal to a telephone line;

message recording means coupled to said transport means, comprising said magnetic record/playback head and responsive to a second audio signal on said telephone line for recording a corresponding message on the particular message information section of said tape adjacent and following said one annoncement information section;

timing means responsive to successive ones of said transfer tones for disabling said announcement control means and

enabling said message recording means a first predetermined time after occurrence of said ring signal, and responsive to corresponding successive ones of said stop tones for disabling said message recording means a second predetermined time thereafter; and

manually operable playback means including said record/-playback head coupled to said transport means for subsequently reproducing from successive ones of said particular message information sections of said tape audible signals corresponding to successive ones of said second audio signals.

4,319,090
METHOD OF DETERMINING EXISTING SERVICE CAPABILITIES OF TELEPHONE EXCHANGE EQUIPMENT

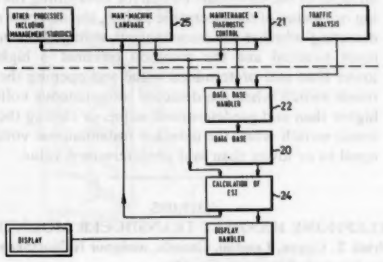
Gerald J. Garwood, Woodbridge, England, and Evelyn M. Swenson, Melbourne, Australia, assignors to Post Office, London, England

Filed May 1, 1980, Ser. No. 145,879

Claims priority, application United Kingdom, May 4, 1979, 15651/79

Int. Cl.³ H04M *3/36, 15/38*

U.S. Cl. 179—8 A **10 Claims**



1. A method of indicating the service provided by telephone exchange equipment having plural items of equipment and capable of processing plural types of telephone calls, said method comprising:

monitoring, over a period of time, the normal expected level of usage of items of equipment required for each call type, and

using said monitored expected level of usages, evaluating, for the number of items of equipment available at a given time, the probability of no items of a particular required type of equipment being able to provide a service when required.

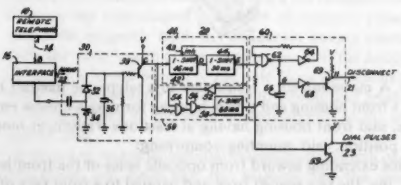
4,319,091
DIAL PULSE RESTORER

Kalju Meri, Maspeth, N.Y., assignor to Dictaphone Corporation, Rye, N.Y.

Filed Oct. 15, 1979, Ser. No. 84,766

Int. Cl.³ H04Q *1/36;* **H04M** *11/10*

U.S. Cl. 179—16 EA **19 Claims**



1. A dial pulse restorer for receiving and restoring telephone dial pulses which may be distorted, and also for discriminating telephone hang-up pulses which may be applied to a telephone line when a remote telephone coupled to said telephone line hangs up, said telephone dial pulses originating as substantially rectangular pulses defined by pairs of transitions, said dial pulse restorer comprising:

means for receiving at least the pairs of transitions defining each dial pulse and a single transition representing the hang-up pulse;

shaping means for shaping said transitions;

window generating means coupled to said shaping means and responsive to the first transition of a pair of transitions to generate a window pulse having a duration encompassing the expected time of occurrence of the second transition of said pair of transitions;

pulse generating means coupled to said window generating means and enabled by said window pulse and responsive to said second transition to generate a simulated dial pulse of predetermined duration if said second transition is received during said window pulse; and

hang-up pulse discriminating means coupled to said window generating means to produce a disconnect pulse if a transition is not received during said window pulse.

4,319,092
CURRENT DETECTION CIRCUIT ARRANGEMENT FOR AN AUTOMATIC TELEPHONE EXCHANGE

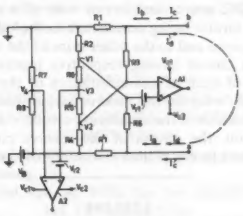
Adrianus W. M. van den Enden, and Job F. P. van Mil, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 14, 1980, Ser. No. 149,781

Claims priority, application Netherlands, Jun. 6, 1979, 7904429

Int. Cl.³ H04M *3/02*

U.S. Cl. 179—18 FA **5 Claims**



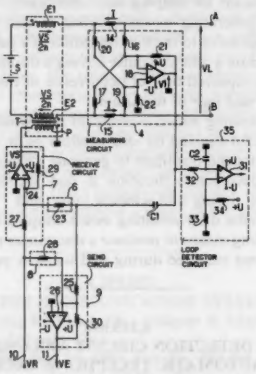
1. A circuit arrangement for an automatic telephone exchange for detecting currents in a system of two conductors having earth as the common return conductor, comprising: a pair of terminals for said conductors, a supply battery and resistor, each one of said terminals being connected to different poles of said supply battery by way of said resistor and further comprising a first pair of resistors arranged in series between the one pole of said supply battery and the other terminal and a second pair of resistors arranged in series between the other pole of said supply battery and the one terminal, the junction of the resistors of said first pair and the junction of the resistors of said second pair constituting a pair of connecting points for the connection of a detector for detecting the differential-mode component of the currents in the two conductors, means for the detection of the common-mode component of the currents in the two conductors by forming the sum of the voltages at the said junctions of said first and second pair of resistors, respectively, and means for comparing said sum of the voltages with the potential at a point of reference potential, an indication of the common-mode component of the currents in the two conductors being derived from said last-mentioned means.

4,319,093

TRANSMISSION BRIDGE FOR A SUBSCRIBER SET

Gerard Bars, Pleumeur Bodou, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Jul. 16, 1980, Ser. No. 169,255
Claims priority, application France, Jul. 17, 1979, 79 18450
Int. Cl.³ H04M *19/00*
U.S. Cl. 179—23 **4 Claims**



1. A transmission bridge for feeding current to a subscriber set, the bridge comprising: an isolation transformer, a measuring circuit, a receive circuit connected to a receive terminal, and a send circuit; the transformer having a primary winding and a secondary winding constituted by two secondary half-windings, each secondary half-winding being connected in series with a respective resistance to constitute respective first and second circuits, the first circuit being connected to one polarity of a DC source and to one wire of a subscriber line, and the other circuit being connected to the other polarity of the said DC source and to the other wire of the subscriber line, the measuring circuit having respective inputs connected to the terminals of each of the resistances of the said first and second circuits, wherein the receive circuit has an input connected to the output of the measuring circuit via an impedance adjusting circuit, the output of the receive circuit being directly connected to the primary winding of the transformer.

4,319,094

THREE-TERMINAL POWER SUPPLY CIRCUIT FOR TELEPHONE SET

Tatsuhiro Naganawa, Yokohama; Makoto Yoshitoshi, Yokosuka, and Kunihiro Kato, Yokohama, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Feb. 25, 1980, Ser. No. 124,632
Claims priority, application Japan, Jul. 3, 1979, 54-83438
Int. Cl.³ H04M *19/00*
U.S. Cl. 179—77 **8 Claims**

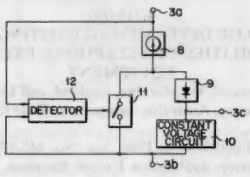
1. A three-terminal power supply circuit for a telephone set, comprising:

an input terminal for receiving a DC voltage superposed with a transmitting or receiving signal; an output terminal for supplying DC power to a telephone circuit; and a common terminal;

a series circuit which includes a constant current circuit and a discharge protection circuit, said series circuit being connected between the input terminal and the output terminal;

a constant voltage circuit connected between the output terminal and the common terminal for supplying a voltage to drive the telephone circuit;

an electronic switch coupled between the input terminal and the common terminal through the constant current circuit, said electronic switch being closed only when an instantaneous voltage applied between the input terminal and the common terminal becomes equal to or lower than a predetermined value to thereby short-circuit the constant voltage circuit through the discharge protection circuit and to thus reduce a cutoff voltage at the input side of the power supply circuit, said discharge protection circuit preventing current flow from said constant voltage circuit to said electronic switch; and



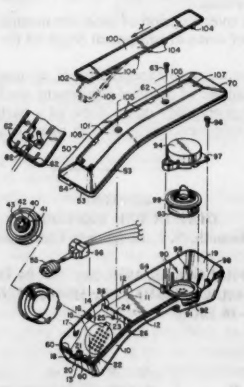
detector means connected between the input terminal and the common terminal and having an output connected to an input of the electronic switch for controlling the opening or closing of the electronic switch, the detector means detecting whether the instantaneous voltage between the input terminal and the common terminal is higher or lower than said pretermined value and opening the electronic switch when the detected instantaneous voltage is higher than said predetermined value, or closing the electronic switch when the detected instantaneous voltage is equal to or lower than said predetermined value.

4,319,095

TELEPHONE HANDSET TRANSDUCER MOUNTING

Fredrick T. Cogan, London, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 6, 1980, Ser. No. 157,271
Int. Cl.³ H04M *1/03*
U.S. Cl. 179—103 **18 Claims**



1. A mounting for a transducer in a telephone handset having a front housing and a back housing forming a hollow enclosure, said front housing having at least one transducer mounting position, said mounting comprising:

ribs extending inward from opposite sides of the front housing, the ribs spaced from and parallel to a front face of the front housing;

a flexible gasket having a cylindrical body portion and an

aperture in a front end of the body portion, said aperture having an inwardly extending tapered rim, said rim extending forwardly of the front surface of said front end;

an inwardly projecting rim at a rear end of the gasket, the rim having a rearwardly and upwardly inclined rear surface; and

projections extending from the body portion at said front end, said projections positioned under said ribs extending from said front housing, said tapered rim deformed against the front face of the front housing; and

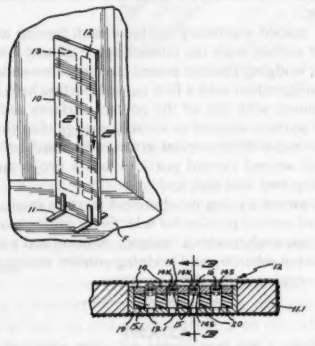
at least one buttress in said front housing locating said gasket longitudinally in said front housing.

4,319,096

LINE RADIATOR RIBBON LOUDSPEAKER

James M. Winey, 367 Carolyn La., White Bear Lake, Minn. 55120

Filed Mar. 13, 1980, Ser. No. 130,209
Int. Cl.³ H04R *9/06*
U.S. Cl. 179—115 V **17 Claims**



1. An elongate sound-producing strip-shaped transducer of narrow width, which is narrow enough in a transverse direction to produce wide dispersion of sound in a side to side direction and which is long enough to minimize dispersion in the other direction and to respond to an audio frequency input current, comprising

a pair of elongate strip-like magnets extending longitudinally of the elongate transducer lying along and in spaced relation with each other, the magnets having strip-shaped pole faces of opposite polarity confronting each other across the width of the elongate space between adjacent magnets and thereby establishing an intense magnetic field in and adjacent the elongate space,

means mounting said magnets in stationary position relative to each other,

a ribbon-like conductor extending longitudinally of the elongate transducer and continuously between the ends thereof, the conductor extending along the elongate space between the strip-shaped pole faces of opposite polarity and in the magnetic field, the conductor having substantially the same length as the magnets, faces of the conductor being oriented normal to the pole faces, the conductor being free to oscillate in the space to vibrate and produce sound according to the input current applied to the conductor, and

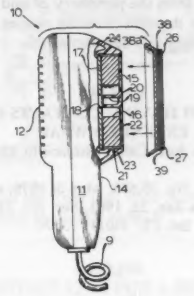
an armature of magnetic material extending the length of the transducer and traversing the magnets and the spaces therebetween and intensifying the magnetic fields in the spaces.

4,319,097

MOUNTING SYSTEM FOR A MOBILE MICROPHONE

James P. Liautaud, River and Bluff Rds., Cary, Ill. 60013

Filed May 5, 1980, Ser. No. 146,758
Int. Cl.³ H04M *1/04*; H04R *1/02*
U.S. Cl. 179—146 R **16 Claims**



1. A mobile microphone mounting system, comprising: a mobile microphone having an encasement surrounding a microphone element; a rear wall of the encasement having a pocket with a thin wall at a base thereof; a magnet positioned within the pocket with a major surface thereof positioned alongside said thin wall; a thickness of the thin wall being sufficiently small to permit significant magnetic attraction therethrough; and means for retaining the magnet in the pocket.

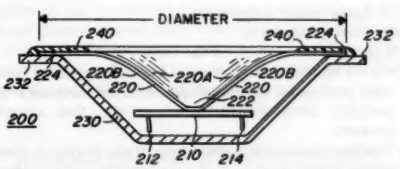
15. A mobile microphone mounting system, comprising: a microphone having an encasement surrounding a microphone element; a rear wall of the encasement having a plastic pocket with a thin plastic wall defining a portion of said rear wall; a magnet means within the encasement and within the pocket for mounting the microphone by magnetic attraction through said thin wall to nearby metal surfaces.

4,319,098

LOUDSPEAKER HAVING A UNITARY MECHANICAL-ACOUSTIC DIAPHRAGM TERMINATION

Neal L. Baitcher, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1980, Ser. No. 145,157
Int. Cl.³ H04R *7/26*
U.S. Cl. 179—180 **4 Claims**



1. A loudspeaker comprising:

a diaphragm of selected material having upper and lower surfaces and including a periphery;

driving means operatively attached to said diaphragm for vibrating said diaphragm in accordance with a varying electrical signal applied to said driving means;

support means for supporting said driving means and said diaphragm around the periphery of said diaphragm, said support means including a flange, the lower surface of said diaphragm at said diaphragm periphery being situated in contact with said flange, and

a layer of acoustic dampening-adhesive material situated covering a sufficient portion of said flange and said diaphragm periphery to form a mechanical connection exhibiting structural integrity between said flange and said diaphragm, said dampening-adhesive material situated covering a sufficient portion of the upper surface of said diaphragm to substantially dampen standing waves otherwise reflecting from the periphery of said diaphragm and to substantially dampen standing waves otherwise mechanically exciting said support means.

4,319,099

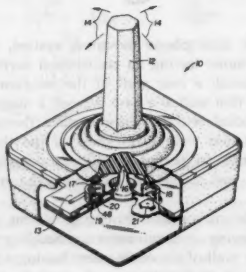
DOME SWITCH HAVING CONTACTS OFFERING EXTENDED WEAR

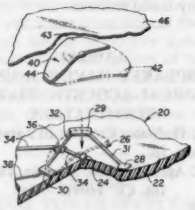
James C. Asher, San Jose, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 35,678, May 3, 1979, abandoned. This application Jan. 22, 1981, Ser. No. 227,321

Int. Cl.³ H01H *13/70*

U.S. Cl. 200—5 A **6 Claims**





1. A dome switch comprising:

an insulating substrate;

a first electrical contact on the substrate;

a second electrical contact provided by a region of electrically conductive material disposed on the substrate at least partially circumferentially about the first electrical contact;

a resilient electrically conductive plate having a central dome shaped portion and a peripheral portion substantially all of which is reversely curved relative to the dome shape, at least one selected portion of the peripheral portion being normally in physical contact with the second electrical contact to provide both mechanical support for said plate and electrical connection with said second electrical contact; and

wherein the central dome shaped portion of the conductive plate is spaced from and overlies the first electrical contact so that actuation of the conductive plate moves the central dome shaped portion into electrical contact with the first electrical contact to thereby electrically connect the first electrical contact to the second electrical contact.

4,319,100

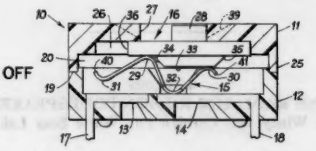
DUAL IN-LINE PROGRAMMING SLIDE SWITCH

Alexander Tallody, Highland Lakes, N.J., assignor to AMF Incorporated, White Plains, N.J.

Filed Jun. 13, 1980, Ser. No. 159,337

Int. Cl.³ H01H *15/00, 1/18*

U.S. Cl. 200—16 R **9 Claims**



1. An electrical switch comprising:

a housing having an interior space and a slot in a portion of the housing;

a pair of spaced stationary contacts each having an exposed contact surface with the interior space of said housing;

a resilient bridging contact means having a free-ended serpentine configuration with a first curved portion held in rocking engagement with one of the contact surfaces and a second curved portion adapted to slidably engage the other contact surface and a third curved portion disposed between said first and second curved portions and a projecting portion extending into said slot; and

actuating means having an abutment portion engagable with said third curved portion for selectively urging said bridging contact means between a bridging position and a non-bridging position whereby said bridging contact means undergoes both a rocking and a sliding motion.

4,319,101

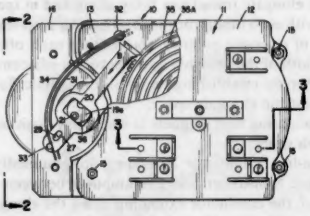
SEQUENTIAL TIMER WITH PROGRAMMABLE DUAL FREQUENCY DRIVE

Donald E. Bolin, Franklin, Tenn., assignor to The Scott & Fetzer Company, Fairview, Tenn.

Filed Feb. 6, 1980, Ser. No. 119,197

Int. Cl.³ F16H *29/00*

U.S. Cl. 200—38 R **6 Claims**



1. A sequential timer with a programmable dual frequency drive comprising means defining a housing, a main program cam comprising a circular flat disc having arcuate switch actuating cams on at least one face thereof, a plurality of switches mounted in said housing and being sequentially actuated by said arcuate cams upon rotation of said program disc, drive means including a constant speed motor, said disc having at least two sets of circularly arranged teeth on the periphery of the disc, and at least two pawls coacting with said circularly arranged teeth, means driven by said motor to drive said pawls

so that said pawls incrementally advance said program disc, said drive means driving one of said pawls at a multiple of the frequency of another pawl.

4,319,102

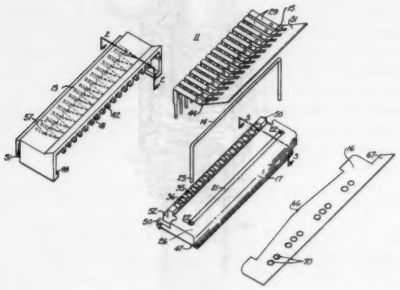
MULTI-POLE SWITCH

Stephen W. Van Cleave, Kensington; Sam T. Hank, Sebring, and Andrew F. Deming, Alliance, all of Ohio, assignors to The Alliance Manufacturing Company, Inc., Alliance, Ohio

Filed Jan. 14, 1980, Ser. No. 111,690

Int. Cl.³ G06K *7/06*; H01H *43/08*

U.S. Cl. 200—46 **29 Claims**



1. A multiple pole switch assembly comprising in combination,

a housing having first and second opposed faces,

contact means on said housing extending substantially in a row,

a plurality of apertures extending through a part of said housing,

a metallic conductor comb disposed between said faces and having a plurality of teeth extending in said apertures,

an integral back on said comb extending on one side of said contact means with the plurality of teeth of the comb overlying said contact means and adapted to make selective engagement therewith,

said comb back being accessible from an area exterior of said housing to be removable to establish individual contact blades of a multiple pole switch assembly,

said housing including base means and a cover therefor,

projections on said cover adapted to engage apertures in said base means,

apertures in said base means adapted to receive said comb teeth, and

means to secure said comb teeth to said base means to prevent removal of said cover and comb teeth from said base means.

4,319,103

PROTECTIVE ENCASEMENT FOR MACHINE TOOLS

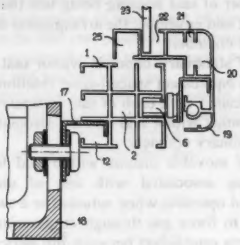
Maurice Piget, Boisset les Prevanches, 27120 Pacy sur Eure, France

Filed Feb. 8, 1980, Ser. No. 119,721

Int. Cl.³ H01H *3/16*

U.S. Cl. 200—61.62 **7 Claims**

1. A protective encasement for machine tools, comprising a fixed part and a movable part composed of a plurality of assembled profiles forming uprights and cross-pieces, and safety circuits comprising contacts and components activated by the operation of the movable part, wherein the fixed part comprises a single profile with a central closed cell surrounded by several open cells or grooves which can be closed and which contain some of the contacts and components, and the movable part comprises a profile which articulates on the fixed part and contains the remaining contacts and components which coop-



erate with those of the fixed part upon movement of the movable part to activate the safety circuits.

4,319,104

MOVABLE CONTACT UNIT FOR A DIRECT-CURRENT, HIGH-CAPACITY CIRCUIT BREAKER

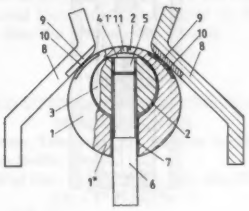
Victor Decroix, Thonon les bains, France; Burkhard Funk, Geneva, Switzerland; Albert Massonnet, Les Hutins de Veraz, France; Hansjörg Weber, Geneva, Switzerland, and Alain Zbinden, Chavannes de Bogis, Switzerland, assignors to BBC Brown, Bovery & Company, Ltd., Baden, Switzerland

Filed Jun. 13, 1979, Ser. No. 48,052

Claims priority, application Switzerland, Jun. 30, 1978, 7145/78

Int. Cl.³ H01N *33/18*

U.S. Cl. 200—147 R **10 Claims**



1. An electrical direct-current contact unit for use in a direct-current, high-capacity circuit breaker, comprising a cylindrical contact body and an eccentrically arranged borehole provided in the contact body and extending in a longitudinal direction of the contact body to form two current paths of different cross-sectional area, whereby the current present in the contact body during the opening of the circuit breaker forms a loop to enhance magnetic quenching of electric arcs formed during a circuit breaking operation.

4,319,105

HIGH VOLTAGE AIR DISCONNECT SWITCH INCORPORATING A PUFFER TYPE LOAD BREAK SWITCH

Donald L. Lott, Portland; Guenter G. Schockelt, Tigard, and Matthew L. Worrix, Sheridan, all of Oreg., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Division of Ser. No. 754,574, Dec. 27, 1976, Pat. No. 4,123,637. This application May 8, 1978, Ser. No. 903,694

Int. Cl.³ H01H *33/88*

U.S. Cl. 200—148 A **3 Claims**

1. In a gas insulated puffer-type interrupter;

an insulating elongated hollow cylindrical envelope charged with an arc-extinguishing insulating gas;

means sealing the ends of said envelope;

an insulating elongated hollow cylindrical housing within said envelope in coaxial relationship therewith, the exterior diameter of said housing being less than the interior diameter of said envelope, the arrangement defining a first and second chamber;

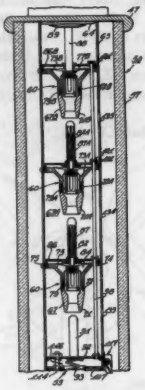
a plurality of stationary contacts within said housing and disposed in equidistant spaced-apart relationship;

a nozzle associated with each of said stationary contacts;

a movable contact within said housing associated with each of said stationary contacts;

a plurality of movable pistons within said housing, each piston being associated with one of said stationary contacts and operable when actuated in a switch-opening movement to force gas through an associated nozzle to blast the arcs established between the associated ones of said stationary and movable contacts to extinguish the arcs;

connecting means operably arranged to connect said movable contacts and said pistons together for simultaneous movement;



actuating means including an energy-storing device within the gas sealed atmosphere of said housing and operable to effect the movement of said connecting means to thereby effect the simultaneous movement of said pistons and said movable contacts in switch closing and opening operations; and,

operating means connected to said actuating means without breaching the gas-sealed integrity of said envelope and extending outwardly thereof, said operating means when moved in a first direction being operable to effect the movement of said actuating means and thereby move said movable contacts into engagement with said stationary contracts and to move said pistons into a gas-puffing ready position, and when moved in a second direction to indicate disengagement of said movable contacts from said associated stationary contacts and to initiate the movement of said pistons in a puffing operation and also to charge said energy-storing device, additional movement of said operating means in the second direction serving to release said energy-storing device to effect a rapid separating movement of said movable contacts and the rapid advancement of said pistons to force a blast of gas through said nozzles.

4,319,106

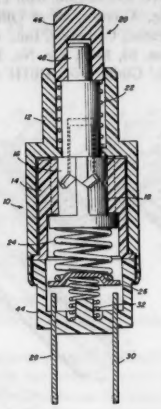
PUSH BUTTON SWITCH

Ralph T. Armitage, 5 Woodward Ave., Gloucester, Mass. 01930

Filed Mar. 31, 1980, Ser. No. 136,150

Int. Cl.³ H01H *13/56*

U.S. Cl. 200—153 J **13 Claims**



1. A push button switch mechanism comprising:

a. a casing member;

b. a rotor housing member coaxially disposed in fixed relationship within said casing member and having 2N slots spaced along the inner wall surface of said rotor housing member, the depth of said slots alternating between different lengths L_1 and L_2;

c. a rotor actuator member coaxially disposed within said rotor housing member in substantially nonrotatable but longitudinally slideable relationship, said rotor actuator member having 2N equally spaced teeth extending in a longitudinal direction from said rotor actuator member and N radially extending ears engaged in alternate slots of said housing member;

d. a rotor member longitudinally slideable in said rotor housing member and having 2N equally spaced teeth extending in a longitudinal direction from said rotor member and N radially extending ears offset from the ears in said rotor actuator member and engaged in the same alternate slots of said housing member as the rotor actuator such that the teeth on the rotor member are not fully meshed with the teeth of the rotor actuator member until the ears on said rotor are beyond a predetermined longitudinal movement of said push-button;

e. the opposing surfaces of the teeth on the rotor member and the rotor actuator member meeting at an angle so that upon longitudinal movement of said rotor actuating member, the rotor member will slide along the inner wall of said rotor housing member up to a predetermined peak whereupon as the rotor actuator member is now caused to rotate until said teeth are fully meshed and where said push button is disengaged the rotor member will rotate until it comes to rest in the next adjacent slot within said housing member;

f. a push button coupled to said rotor actuating member;

g. a first spring exerting a force F_1 in opposition to the longitudinal movement of said rotor member;

h. a substantially planar shorting contact disposed at one end of said first spring;

i. a second spring exerting a force F_2 in opposition to the longitudinal movement in the rotor member;

j. at least two terminals disposed adjacent said planar shorting contact; and

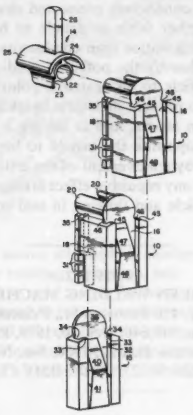
k. and a third spring exerting a force F_3 in opposition to the longitudinal movement of said push button.

4,319,107

ENCLOSED MODULAR SWITCH

Steve W. Haskins, Corinth, Miss., assignor to Northern Telecom, Inc., Ottawa, Canada

Filed Jul. 22, 1980, Ser. No. 171,175
Int. Cl.³ H01H 9/02
U.S. Cl. 200—303 **10 Claims**



1. An enclosed modular switch comprising:

a first body member having a back, sides and a base forming a hollow enclosure;

arcuate extensions on said sides, concave inner surfaces of said arcuate extensions defining a bore at a top end of said body member, said bore closed at its back by said back of the first body member;

an actuator rotatably mounted at said top end of said first body member, said actuator including a cylindrical body portion rotatably mounted in said bore, an arcuate shroud spaced from said body portion, an actuating lever extending from said shroud, and a contact lever extending from said body portion into said first body member, the shroud having a close sliding fit on convex outer surfaces of said arcuate extensions;

a plurality of cantilever contacts mounted on said first body member, one of said contacts including an extension for contact by said contact lever and movement thereby;

a cover slideable onto said first body member to form a front closing member at forward edges of said sides, said cover including an extension to extend over front edges of said arcuate extensions;

said contacts including terminal portions extending from said first body member;

movement of said actuating lever rotating said cylindrical body portion, said shroud moving over said converse outer surfaces, and said contact lever moving said one of said contacts to modify a switch condition.

4,319,108

FORCE-LIMITING COUPLING APPARATUS

Leonard V. Chabala, Maywood, Ill., assignor to S&C Electric Company, Chicago, Ill.

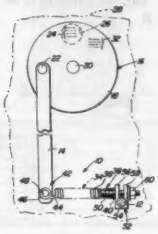
Filed Feb. 23, 1981, Ser. No. 237,226
Int. Cl.³ H01H 9/00
U.S. Cl. 200—308 **16 Claims**

1. Force-limiting coupling apparatus for moving a driven member in response to movement of a drive member, the drive member being movable at high velocity between first and second rest positions of the drive member; the apparatus comprising:

a connecting link having first and second separated sites thereon, the link including:

first means responsive to movement of the drive member between the first rest position and the second rest position for moving the first site therewith between respective first and second locations;

second means responsive to movement of the second site between a first location and a second location for moving the driven member therewith between the respective first and second positions; and



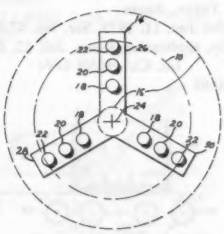
a member interconnecting the sites for moving the second site between its first and second locations synchronously and isochronously with the movement of the first site between its first and second locations if the velocity of the first site is less than a predetermined value, and, for moving the second site between its first and second locations asynchronously and heterochronously with movement of the first site between its first and second location if the velocity of the first site is greater than the predetermined value.

4,319,109

CENTERED UTENSIL SENSOR FOR INDUCTION SURFACE UNITS

Howard R. Bowles, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 28, 1979, Ser. No. 108,087
Int. Cl.³ H05B 6/12
U.S. Cl. 219—10.49 R **9 Claims**



1. In an induction cooking apparatus of the type including an induction heating coil and a cooking surface adapted for supporting a cooking utensil in a cooking area above said coil, the improvement comprising:

a utensil position detecting arrangement for generating a signal indicative of the position of said utensil relative to the approximate center of said area, said arrangement including a set of sensors located below said cooking surface, said set including a plurality of sensors located substantially the same distance from said center, each sensor operative to provide a signal indicative of the

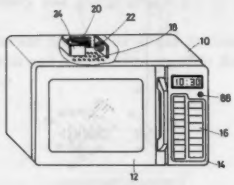
presence or absence of a portion of said utensil directly thereover, and signal processing means responsive to signals generated by said sensors for generating different output signals in response to the fullness of activation of said set.

4,319,110

MICROWAVE OVEN EMPLOYING A GAS SENSOR

Takeshi Tanabe, Higashiosaka; Hideshi Nakagawa, Osaka, and Takeshi Fujihara, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 22, 1980, Ser. No. 152,421
Claims priority, application Japan, May 22, 1979, 54-64681
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **5 Claims**



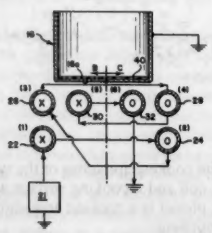
1. A microwave oven comprising:
a microwave generation source;
a gas sensor disposed in an exhaustion gas path for detecting the concentration of a gas developed from a foodstuff disposed in an oven cavity;
microwave generation control means for activating said microwave generation source in accordance with an output signal derived from said gas sensor;
abnormal condition detection means for detecting an abnormal condition occurring in said gas sensor; and
control means for precluding the activation of said microwave generation source when a detection output is developed from said abnormal condition detection means.

4,319,111

HIGH FREQUENCY INDUCTION HEATING APPARATUS HAVING A VACUUM OSCILLATOR MEANS

Kazuhisa Ishibashi, Yokohama, Japan, assignor to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jun. 11, 1979, Ser. No. 47,647
Claims priority, application Japan, Jul. 12, 1978, 53-84919
Int. Cl.³ H05B *6/44*
U.S. Cl. 219—10.69 **4 Claims**



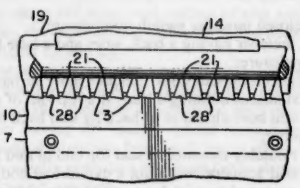
1. In a high frequency induction heating apparatus for heating an article where said apparatus has a heating station, means for moving an article through the heating station, a source of high frequency current including a vacuum tube oscillator means, and a plurality of high frequency electrical conductors extending substantially parallel to the path of movement of an article through said heating station connected to said source and to ground; the improvement comprising in that all said conductors are connected in a single series with one end of the series being connected to ground and the other end of the series being connected to said source, in that one-half of said conductors form inflow conductors positioned adjacent one another in one-half of said heating station, in that the remaining one-half of said conductors form outflow conductors positioned adjacent one another in the remaining one-half of said heating station with the flow of current in said inflow conductors and said outflow conductors being in mutually opposite directions, in that conductors connected closer to said source are positioned further from an article to be heated moving through said heating station than conductors connected closer to said ground whereby the potential gradient between each conductor and article to be heated is controllable to a fixed maximum value to prevent dielectric breakdown between the conductors and an article, and in having a guide plate positioned on a side opposite the article to be heated than said conductors whereby a movement of the article away from the conductors due to any repulsive effect arising from the current induced in the article and flowing in said conductors will be limited.

4,319,112

SCREEN WELDING MACHINE

James D. Connolly, 410 Johnston St., Princeton, W. Va. 24740

Division of Ser. No. 949,640, Oct. 10, 1978, Pat. No. 4,221,951.
This application Jan. 22, 1980, Ser. No. 114,290
Int. Cl.³ B23K *9/225, 37/04*; B21F *15/08, 27/10*
U.S. Cl. 219—56 **6 Claims**



1. A machine for welding spaced longitudinal wires to spaced transverse rods, comprising means for clamping and welding the transverse rods in succession to the longitudinal wires at a welding station, means for incrementally feeding the longitudinal wires to and through said station, spacer means engageable with the longitudinal wires in advance of said station for predetermining the lateral spacing therebetween, means for supporting and backing the screen wires against forces exerted thereon by said spacer means, and slots in and tilted laterally of confronting end surfaces of said supporting and spacer means for slidably receiving and guiding the screen wires and enabling the screen wires to be correspondingly tilted longitudinally of the transverse rods when welded thereto.

4,319,113

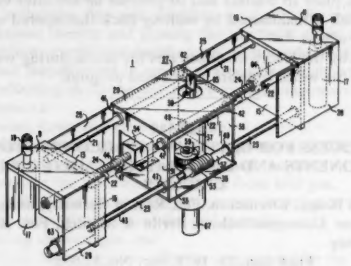
APPARATUS FOR WELDING TUBES TO A TUBESHEET UTILIZING A CONTINUOUS WELD

Raymond H. Glatthorn, St. Petersburg; Robert E. Monley, Tampa, and Urban A. Schneider, St. Petersburg, all of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 9, 1980, Ser. No. 148,449
Int. Cl.³ B23K *9/02*
U.S. Cl. 219—60.2 **3 Claims**

1. Apparatus for welding tubes to a tube sheet utilizing a continuous weld, said apparatus comprising:
a base member disposed on opposite ends of the apparatus,

each base member having means disposed thereon for detachably attaching the apparatus to the tube sheet;
a plurality of bars disposed between the base members and connecting them together;
a carriage slidably disposed on said bars;
a welding torch rotatably disposed in said carriage;
a first drive motor attached to one of said bars for intermittently moving said carriage between said base member;



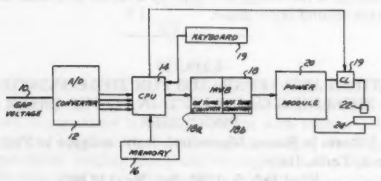
a second drive motor attached to another of said bars for intermittently rotating said torch, and
means attached to said torch for accurately locating the torch with respect to each tube prior to the rotating means being activated whereby by activating the drive motors serially a continuous weld will be formed incorporating the juncture of a given number of tubes and the tube sheet.

4,319,114

CURRENT LIMIT SYSTEM FOR ELECTRICAL DISCHARGE MACHINING APPARATUS

Oliver A. Bell, Jr., Statesville; Randall C. Gilleland, Troutman, and Davey J. Chance, Concord, all of N.C., assignors to Colt Industries Operating Corp, New York, N.Y.

Filed Aug. 21, 1979, Ser. No. 68,461
Int. Cl.³ B23P *1/02*
U.S. Cl. 219—69 C **7 Claims**



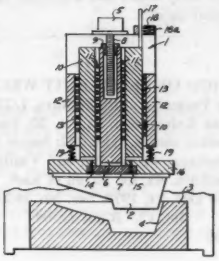
1. A current limit system for electrical discharge machining apparatus, comprising means for controlling gap current; a pulse generator including an on time and an off time control means, comprising:
means for preselecting values representative of on and off time and of a current limit magnitude setting;
means for predetermining and storing a plurality of allowable total period data, one for each of the current limit settings in an ordered table;
means for making an initial check to determine if the total period is greater than a maximum predetermined amount thus to permit any of the current limit settings and accordingly inhibiting further current limit checking;
means for comparing the period of the preselected on-off time combination less than said maximum predetermined amount to the table value; and
means for increasing the off time to the maximum allowable table value for the preselected current limit magnitude and entering said on and off times in said pulse generator.

4,319,115

ELECTRODE TOOL HOLDER FOR EDM APPARATUS

Benno I. Bonga, Crans, Switzerland, assignor to Ateliers des Charmilles, Geneva, Switzerland

Filed Feb. 25, 1980, Ser. No. 123,995
Claims priority, application Switzerland, Mar. 9, 1979, 2276/79
Int. Cl.³ B23P *1/12*
U.S. Cl. 219—69 R **4 Claims**



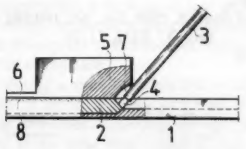
1. In an EDM apparatus for machining by electrical discharges an electrode workpiece by means of an electrode tool, said EDM apparatus comprising an electrode tool holder and a single servo motor displacing said electrode tool holder as a function of machining conditions, the improvement comprising at least a pair of separate slide members, a separate electrode tool holder mounted on each of said slide members, means permanently coupling one of said slide members to said servo motor and driving said one of said slide members by said servo motor, means for mutually coupling and uncoupling said slide members, and means immobilizing the one of said slide members not driven by said servo motor when said slide members are uncoupled.

4,319,116

WELDING USING SOAP SHIELDING

Markku Kauppi, 54750 Välijoki; Juhani Niinivaara, 54710 Lemi, both of Finland; Markku Nurminen, deceased, late of Husupyöli, Finland, and by Marjatta Nurminen, administrator, Pyöliarinne 17 C 4, 49510 Husupyöli, Finland

Filed Jun. 26, 1979, Ser. No. 52,150
Claims priority, application Finland, Jun. 28, 1978, 780282; Jun. 30, 1978, 780283
Int. Cl.³ B23K *9/16, 35/38, 35/02, 35/34*
U.S. Cl. 219—72 **10 Claims**



1. A procedure for carrying out arc welding in underwater conditions, or in conditions of high humidity or draught causing similar difficulties for welding, said procedure comprising striking an arc between a welding electrode and a metal base which is being welded and moving the electrode relative to the base so as to produce a seam, and said procedure further comprising providing a paste-like auxiliary substance to the arc area or its immediate vicinity so that it will contribute to the burning taking place therein, whereby the quality of the seam produced is improved, said auxiliary substance comprising, as at least a major component, a soap which is a salt formed by

anions of at least one member selected from the group consisting of a fatty acid, a mixture of fatty acids, and a mixture of fatty and resin acids, and by metal cations.

10. A welding rod for carrying out arc welding in underwater conditions, or in conditions of high humidity or draught causing similar difficulties for welding, said welding rod being coated with an auxiliary substance containing as at least a major component a soap which is a salt formed by at least one member selected from the group consisting of anions of a fatty acid, a mixture of fatty acids, and a mixture of fatty and resin acids, and by metal cations.

4,319,117

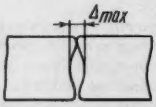
METHOD OF FLASH BUTT WELDING

Sergei I. Kuchuk-Yatsenko, ulitsa Filatova, 1/22, kv. 47; Boris I. Kazymov, ulitsa Kotovskogo, 11, kv. 20; Vasily F. Zagadarchuk, Kharkovskoe shosse, 2, kv. 232; Sergei A. Solodovnikov, ulitsa Solomenskaya, 41, kv. 50, and Vasily A. Sakharnov, ulitsa Solomenskaya, 41, kv. 93, all of Kiev, U.S.S.R.

Filed Dec. 11, 1979, Ser. No. 102,443

Int. Cl.³ B23K *11/04*

U.S. Cl. 219—100 **2 Claims**



1. A method of flash butt welding of ferrous-metal rolled products of from 5 to 20 mm in thickness, which method comprises fusing the end faces of the work pieces being welded together with a preset no-load voltage and upsetting the work pieces by an amount ranging within from 1.2 to 1.8 of the amount of the maximum gap between the end faces of the work pieces being welded together, the maximum gap being determined from the following relation:

$$\Delta_{max} = U_0(0.022\cdot\delta + 0.200),$$

where:

Δ_{max} = maximum gap;

U_o = no-load voltage;

δ = thickness of the work pieces being welded together.

4,319,118

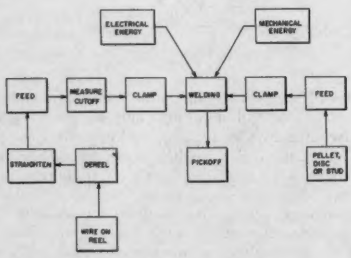
METHOD OF WELDING TANTALUM LEAD WIRES TO TANTALUM CAPACITOR ANODES

Kenneth R. Chason, Hadley, Pa., assignor to GTI Corporation, San Diego, Calif.

Filed Jun. 18, 1980, Ser. No. 160,582

Int. Cl.³ B23K *11/16*

U.S. Cl. 219—118 **1 Claim**



1. In the manufacture of tantalum capacitors, the method of welding tantalum lead wires to tantalum capacitor anode elements comprising under atmospheric conditions:

cutting said wire on an angle to its axis to produce a tapered end;

driving the tapered end of the wire into a surface of the anode element;

slowly discharging capacitively stored electrical energy through a series resistor and then through the lead wire and anode element in the manner to minimize arcing, if any, prior to contact and to provide an arc after contact which is maintained by melting back the tapered end of the wire;

whereby the lead wire penetrates the anode during welding but the weldments are not caused to ignite.

4,319,119

PROCESS FOR GETTERING SEMICONDUCTOR COMPONENTS AND INTEGRATED SEMICONDUCTOR CIRCUITS

Hartmut Runge, Kirchseeon, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 25, 1979, Ser. No. 52,075

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 2829983

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LM **7 Claims**

1. In a process for gettering semiconductor components and integrated semiconductor circuits whose structures are produced in monocrystalline semiconductor material wafers wherein gettering areas are provided on a back side of such wafer, the improvement comprising:

controllably irradiating select areas of a back side of a monocrystalline semiconductor material wafer with laser light pulses so as to produce dislocation networks in the irradiated areas, said laser irradiation being controlled in such a manner that at least two laser pulses are irradiated onto said select areas of the wafer, a first laser pulse being of sufficient energy to evaporate a relatively thin layer of material from the irradiated areas and a second laser pulse being of sufficient energy to produce dislocation networks in the irradiated areas, said first laser pulse having an energy level which is higher by a factor of 2 than that of said second layer pulse.

4,319,120

METHOD AND APPARATUS FOR THE CONTROL OF SHIELDING GASES USED IN POWER LASER PROCESSES

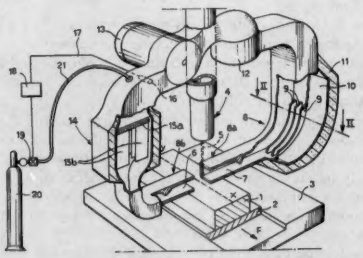
Aldo Vittorio la Rocca, Moncalieri, Italy, assignor to Fiat Auto S.p.A, Turin, Italy

Filed Feb. 8, 1980, Ser. No. 119,905

Claims priority, application Italy, Mar. 5, 1979, 67465 A/79

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 FS **8 Claims**



1. A method of controlling shielding gas used in power laser

processes carried out on metal workpieces, comprising the steps of:

(a) supplying a high-speed jet of shielding gas to the zone of the workpiece surface being subjected to the action of the laser radiation, said jet of shielding gas being directed parallel to the workpiece surface in adherence therewith and serving to remove by entrainment into the jet both metal particles separated from the workpiece by the action of the laser radiation and the cushion of plasma generated by the laser radiation,

(b) collecting the said shielding gas with the matter entrained therein and passing the gas back along a return path to supply the shielding gas jet whereby to cause the said shielding gas to circulate around a circuit, and

(c) effecting along the said return path the successive operations of:

slowing down the gas by diffusion,

cooling the said gas to a low temperature to condense into solid particles liquid metal entrained therein,

separating the solid metal particles from said gas,

subjecting said gas to a pumping action in order to maintain the gas in flow around the said circuit,

filtering the said gas, and

cooling the said gas in order to compensate for the heating effect of said pumping action.

4,319,121

METHOD OF PRODUCING CLAD STEEL MATERIALS

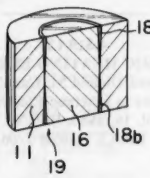
Toshio Yoshida, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Apr. 25, 1980, Ser. No. 143,869

Claims priority, application Japan, Jul. 11, 1979, 54-86946

Int. Cl.³ B23K *15/00*

U.S. Cl. 219—121 ED **8 Claims**



1. A method for producing clad steel materials which comprises placing against a steel material a metal material of a different composition in laminated state with mutual contact along a joint interface having two opposite edges, carrying out electron-beam welding along and throughout said joint interface by means of a superhigh-output electron beam whereby the electron beam is projected from each of said two edges toward the other edge, so as to fully reach an intermediate line between the two edges, to thereby obtain a metallurgical welded joint along the entire interface, and plastically extending metal materials thus joined.

4,319,122

SYNCHRONOUS ARRANGEMENT AND METHOD FOR HEAT TREATING WORKPIECES

Peter J. Pope, Balcombe, and Richard B. Willis-Owen, Horsham, both of England, assignors to Duracell International Inc., Bethel, Conn.

Filed Aug. 7, 1980, Ser. No. 176,167

Claims priority, application United Kingdom, Feb. 20, 1980, 05705/80

Int. Cl.³ B23K *27/00*

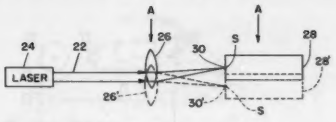
U.S. Cl. 219—121 LC **16 Claims**

1. Arrangement for treating a moving workpiece with a beam of radiation, comprising:

a. means in said arrangement for generating a generally collimated beam of said radiation and projecting said beam towards said workpiece;

b. means for conveying said workpiece through said beam of radiation;

c. an optical focusing system comprising at least one lens positioned to project the beam from said beam generating



means towards said moving workpiece, said workpiece being substantially located in the plane of the focal point of said optical focusing system;

d. and means for moving said lens in synchronism with said workpiece and in a path which is in parallel relationship to the path of movement of said workpiece while said workpiece and said lens traverse said beam of radiation.

4,319,123

METHOD OF CONTROLLING A MAGNETICALLY GUIDED WELDING ARC

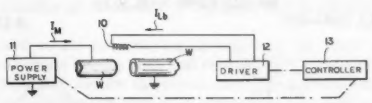
Norbert Pache, Augsburg; Franz-Josef Ganowski, Maingründel, and Karel Mazac, Augsburg, all of Fed. Rep. of Germany, assignors to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Sep. 11, 1979, Ser. No. 74,298

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1978, 2839544

Int. Cl.³ B23K *9/08*

U.S. Cl. 219—123 **4 Claims**



1. In a welding method wherein an arc through which current flows is struck between a pair of spaced-apart tubular workpiece portions and is thereafter guided by a magnetic field of variable field strength, the improvement comprising the steps of sequentially:

employing a relatively strong magnetic field and passing a relatively great current through said arc during a start phase commencing at striking of said arc;

reducing during a subsequent main phase the strength of said field and the current of said arc to a fraction of their values during the start phase;

increasing during a terminal phase the current of said arc to a multiple of its value during said main phase; and

immediately thereafter interrupting said arc wholly and generally at the same time engaging said workpiece portions together.

4,319,124

MONITORING AND FEEDBACK CONTROLS FOR A SPRAY WELDING APPARATUS

Rune L. Johansson, Älvängen, Sweden, assignor to Thermal Dynamics Corporation, West Lebanon, N.H.

Filed Feb. 21, 1980, Ser. No. 123,332

Claims priority, application Sweden, Mar. 1, 1979, 7901872

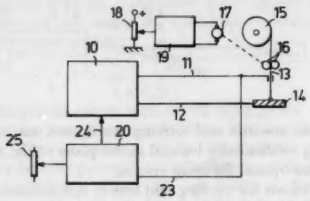
Int. Cl.³ B23K *9/09*

U.S. Cl. 219—130.21 **11 Claims**

7. Apparatus for spray-arc welding of the type which

supplies power to a weld by the application of voltage between a feed wire electrode and a workpiece, comprising:

means for periodically reducing the power applied to the weld; means responsive to the power supplied to the weld for terminating the power reduction period when the power supplied to the weld reaches a predetermined reference level; means for providing a measure of the duration



of said power reduction period; comparing means for comparing said measured duration with a reference duration; and control means responsive to said comparing means for adjusting the power to said weld in accordance with the difference between said measured duration and said reference duration in a direction to equalize the measured and reference durations.

4,319,125

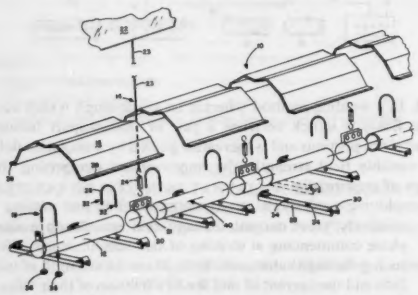
INFRA-RED RADIANT HEATER SYSTEM

Fred J. Prince, 2133 Waynoka Rd., Euclid, Ohio 44117

Filed Jul. 20, 1979, Ser. No. 59,288

Int. Cl.³ F24H *9/06, 9/14*

U.S. Cl. 219—347 **6 Claims**



1. A radiant heater system comprising:

(a) a tubular conduit through which hot fluid is transported from one end to another and along which the temperature varies;

(b) a plurality of support structures for supporting the conduit at spaced locations along its length;

(c) a first reflector between and spaced from two successive support structures, the first reflector constructed and shaped to reflect and disperse heat waves from the conduit;

(d) a second reflector between and spaced from two successive support structures, the second reflector constructed and shaped to reflect heat in a path more confined than that of the first reflector; and

(e) the first reflector being adjacent a hotter portion of the conduit than the second reflector.

4,319,126

TEMPERATURE DEPENDENT ELECTRIC CURRENT-REGULATOR-OR-LIMITING SWITCHING ELEMENT FOR ELECTRICAL APPLIANCES: ESPECIALLY ELECTRICALLY HEATED DEVICES

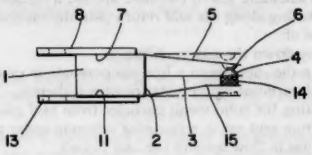
Ante Lujic, Benfeld, France, assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 12, 1979, Ser. No. 102,597

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1978, 2853776

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—512 **11 Claims**



1. A temperature responsive electrical switching device characterized in that the device has

(a) mounting means;

(b) a first and second electrical contact, at least one of which is supported on said mounting means by a temperature responsive member operable to open said contact pair upon experiencing a first predetermined temperature; and,

(c) normally conductive trigger means electrically in series with said contact pair and supported by said mounting means, said trigger means including a second temperature responsive member and being operative upon experiencing a second predetermined temperature, to become open-circuit.

4,319,127

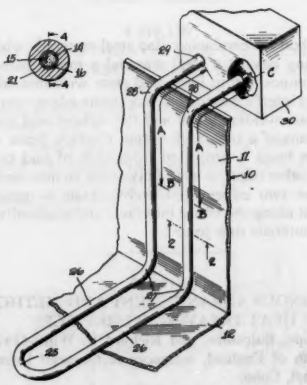
ELECTRIC HEATING ELEMENTS

John A. Lindstrom, and Donald M. Cunningham, both of Pittsburgh, Pa., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jul. 16, 1980, Ser. No. 169,413

Int. Cl.³ H05B *3/06*

U.S. Cl. 219—523 **2 Claims**



1. An electric heating assembly having a portion adapted to be immersed in molten metal which is contained within a tank, for maintaining said metal in molten condition, comprising:

an elongated, rectilinear electric heating element having a tubular, heat-conducting metal sheath of a wall thickness of about 0.035 inches, a resistor centrally of and extending lengthwise within said sheath, and compacted refractory

material within said sheath for electrically insulating said resistor from said sheath, but conducting heat from said resistor to said sheath,

an elongated, rectilinear metal tube having a central longitudinally-extending opening of a transverse shape complementary to the transverse shape of said sheath and of a transverse size slightly larger than the transverse size of said sheath, said tuoe opening closely receiving said sheath and being substantially coextensive with at least a greater portion of said sheath,

said tube having a wall thickness of at least 0.125 inches, and being laterally compressed upon said sheath while both are in rectilinear form to fit around said sheath in metal-to-metal heat-transfer contact to produce a manufactured assembly in an initial form,

said assembly being subsequently bent to specific curvilinear formation for proper insertion into said tank with the protected portion of said sheath arranged for immersion within said molten metal, and

said tube being of a metal having a higher melting point than the temperature of the molten metal in said tank, and providing a substantial and uniform wall around said tube to shield the latter from destructive attack by said molten metal.

4,319,128

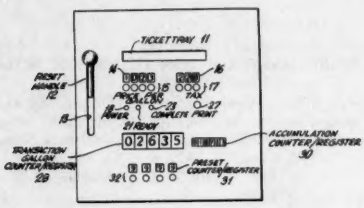
MICROPROCESSOR CONTROLLED DISPENSING METERING APPARATUS

John Dow, Jr., Rumson; William A. Oetting, Green Brook; Richard J. Yessian, Martinsville, and Thomas J. Brady, Linden, all of N.J., assignors to Lockheed Electronics Co., Inc., Plainfield, N.J.

Filed Feb. 5, 1980, Ser. No. 118,772

Int. Cl.[3] B67D *5/24*; G06C *29/00*; G06F *15/56*

U.S. Cl. 235—61 PD **10 Claims**



1. In combination in product metering apparatus, microprocessor means including instruction and read and write memory means, an invoice tray, a print wheel, print wheel driving means, product flow measuring means, plural input means connected to said microprocessor means including product cost rate register means, tray position signalling means, print wheel position signalling means, and said fuel flow measuring means, plural output means connected and responsive to said microprocessor means including said print wheel driving means and print actuating means, said microprocessor means including means for accumulating the product dispensed signalled by said product flow measuring means as an accumulation in said read and write memory means, means for storing the contents of said product cost rate register means in said memory means, means for energizing said print wheel drive means for traversing said print wheel across said invoice tray while rotating said print wheel, and means for selectively activating said print actuating means for outputting a record of the value of the product dispensed determined as the product of said contents of said product cost rate register means stored in said memory means and said accumulated dispensed product value.

4,319,129

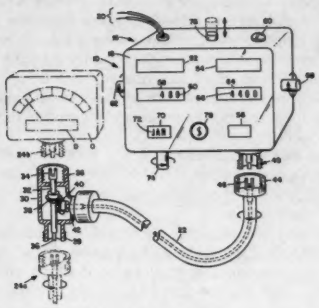
AUTOMATIC FUEL MONITORING SYSTEM

Bartholomew F. Quintilian, 4259 Sheldon Ave., Baltimore, Md. 21206

Filed Nov. 28, 1979, Ser. No. 98,346

Int. Cl.[3] G01C *22/00*

U.S. Cl. 235—97 **12 Claims**



1. A system for in-vehicle budgeting of fuel allotments comprising:

means for displaying a short period allotment in units of travel distance and means for adjustably displaying said short period allotment in units of time,

means for displaying a long period allotment in units of travel distance,

means for currently depleting said display of short period allotment in accordance with vehicle distance travelled, means for periodically replenishing said display of short period allotment, means for resetting said units of time in accordance with said periodic replenishments, means for warning of exhaustion of the short period allotment display,

circuit means for stopping depletion of the short period allotment display upon said exhaustion of the short period allotment and for thereupon currently depleting the long period allotment display in accordance with vehicle miles travelled, and means for warning of exhaustion of the long period allotment display.

4,319,130

DEVICE FOR THE AUTOMATED DIGITAL TRANSCRIPTION AND PROCESSING OF QUANTITIES AND UNITS

Alexander Spitzner, Berlin, German Democratic Rep., assignor to VEB Applikationszentrum Elektronik Berlin, Berlin, German Democratic Rep.

Continuation-in-part of Ser. No. 758,606, Jan. 12, 1977, abandoned. This application Mar. 12, 1980, Ser. No. 129,536

Claims priority, application German Democratic Rep., May 18, 1976, 192895

Int. Cl.[3] G06F *15/02, 3/02*

U.S. Cl. 235—310 **10 Claims**

1. Device for the automated digital transcription and processing of various quantities and units of a defined quantity system of the kind including units of the International System of Units, national units, and other NonInternational System units, wherein each input or output quantity is termed a homoscriptive quantity and has a first portion representing the numerical part of the quantity and a second portion termed a homoscriptive unit representing the unit of measurement in the form of an exponential product of units of the quantity, said device comprising:

entry and display means including an alphanumeric display and an alphanumeric keyboard connected to the input of a numeric value register for storing the numerical part and

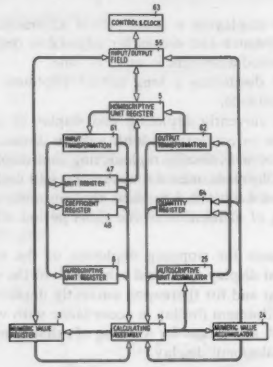
to the input of a homoscriptive unit register for storing the homoscriptive unit;

input transformation means connected to the output of said homoscriptive unit register and cooperating with said keyboard, a calculating assembly, and said numeric value register for transforming said homoscriptive quantity into an internally operable format, termed an autoscriptive quantity, having a first portion for storage in said numeric value register and representing the numerical part of the autoscriptive quantity and a second portion representing the autoscriptive units of the quantity in the form of exponents to base units of the quantity system;

an autoscriptive unit register connected with the output of said input transformation means for storing the autoscriptive units;

an exponent-1 register connected with the output of said input transformation means for storing the exponent of the first factor of the exponential product of the homoscriptive unit;

calculating means selectively operably connected with said numeric value register and a numeric value accumulator for storing the numerical parts of a first and a second autoscriptive quantity and selectively operably connected with said autoscriptive unit register and an autoscriptive unit accumulator for storing the autoscriptive units of the



first and the second autoscriptive quantity and being connected with said calculating assembly and connected to be controlled by said keyboard, said calculating means operating to process at least the first autoscriptive quantity to an intermediate result termed a third autoscriptive quantity upon a given signal by said entry means for storing in said numeric value accumulator and said autoscriptive unit accumulator, wherein the numerical part and the autoscriptive unit of the third autoscriptive quantity are processed separately and independently from each other;

output transformation means connected with said numeric value accumulator, said autoscriptive unit accumulator, and said exponent-1 register and cooperating with said calculating assembly and a prefix generator for transforming the processed autoscriptive quantities into homoscriptive quantities suitable for display by said display means;

said prefix generator being connected with said calculating assembly, said numeric value accumulator, and said exponent-1 register for generating a prefix in dependence on the contents of said numeric value accumulator and the contents of said exponent-1 register, the output of said prefix generator being connected to said homoscriptive unit register for storing said generated prefix; and

control means operably connected for controlling and timing the entry, transcription, processing, and display of quantities.

4,319,131

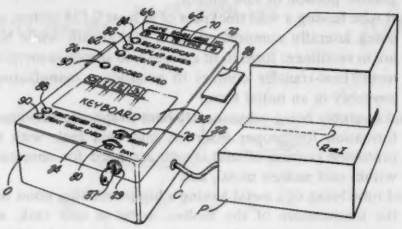
SCORE RECORD PROCESSING SYSTEM

Thomas C. McGeary, 2412 Palos Verdes Dr. West, and Angus A. Scott, 2709 Paseo del Mar, both of Palos Verdes Estates, Calif. 90274

Continuation-in-part of Ser. No. 100,572, Dec. 5, 1979, Pat. No. 4,268,744. This application Oct. 20, 1980, Ser. No. 198,313

Int. Cl.³ G06F *15/20*

U.S. Cl. 235—375 **8 Claims**



1. A record system for scoring, as in golf, for operation with record cards or the like, bearing a record medium comprising:

means for sensing said record medium to provide signals from a specific card identified with a specific person and representative of a scoring composite for that person;

a controlled access input panel for forming signals representative of a current score by said specific person;

computer means for receiving said signals representative of a current score and said signals representative of said scoring composite to compute a fresh scoring composite;

recording means for recording said signals on said cards, updated to include said current score; and

printing means for printing representations of said fresh scoring composite on said record cards.

4,319,132

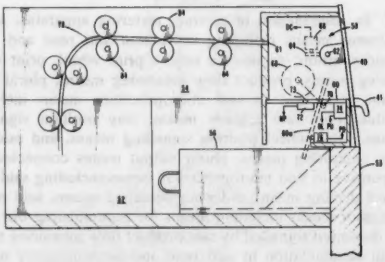
PURGE CONTROL FOR AUTOMATIC NOTE DISPENSER

Ronald D. Guibord, Boylston; Neil W. Harman, and Richard E. Hennessy, both of Marlborough, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 14, 1979, Ser. No. 103,688

Int. Cl.³ G07F *7/10*; **G06F** *7/00*; **G06K** *17/00*

U.S. Cl. 235—379 **12 Claims**



1. A note dispensing system comprising, in combination:

an operator panel including means for allowing an operator to request a note dispensing operation;

a dispensing chamber adjacent to said panel having an access door by which said operator can gain access to said chamber;

means for dispensing at least one note into said chamber in response to a dispensing operation request;

a tiltable plate positioned to receive said note when it is dispensed into said chamber;

security means including means for locking said access door prior to a discharging of said note from said chamber and during a note dispensing operation, and means for unlocking said door upon completion of said operation to permit said operator to open said door to remove said note;

timing means responsive to a lock control signal received from said security means for indicating the occurrence of a set period of time following the unlocking of said door by said security means;

means for tilting said plate to allow gravity to discharge said note from said chamber if said door is not opened within said set period of time; and

means for restoring said plate to its original non-tilted position and for providing an output signal indicative thereof to condition said system for further operation of said dispensing means.

4,319,133

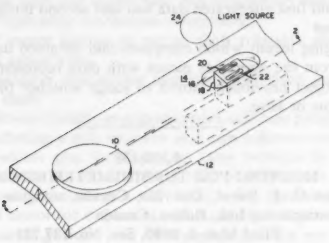
PHOTOELECTRIC DETECTION SYSTEM

James R. Currie, and Raymond R. Schansman, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 30, 1980, Ser. No. 145,272

Int. Cl.³ G01D *21/04*

U.S. Cl. 250—214 B **7 Claims**



1. A photoelectric detection system comprising:

signal generating means for generating an electrical signal at a selected frequency;

light means responsive to said electrical signal for generating a light output at said frequency;

light sensing means for providing a delayed electrical output at said frequency when a discrete light path between said light means and said light sensing means is completed by a reflection of light from said light means onto said light sensing means;

exclusively OR signal means responsive to an output of said signal generating means and an output of said light sensing means for providing a signal output which is significant only when the signal input at one, and only one, of the inputs is significant; and

indication means responsive to said signal output of said exclusively OR signal means for providing a discrete indication signal when said signal output appears for less than a selected period within a selected period.

4,319,134

OPTICAL ENCODER

Otto K. Weber, Chatsworth, Calif., assignor to Sensor Technology, Inc., Chatsworth, Calif.

Division of Ser. No. 916,226, Jun. 16, 1978, Pat. No. 4,224,514. This application Apr. 21, 1980, Ser. No. 142,345

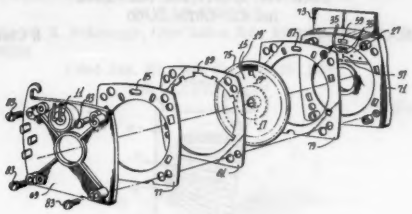
Int. Cl.³ G01D *5/34*

U.S. Cl. 250—231 SE **5 Claims**

1. A method of making an optical shaft encoder of a type that produces an electrical signal having a phase angle representative of the relative position of a movable shaft, said encoder including a source of light, a photocell positioned to receive the light, means coupled to the movable shaft for blocking transmission of the light to the photocell in accordance with the relative position of the shaft, and amplifier means coupled to the photocell for producing the electrical signal, said amplifier means including variable resistance means for use in controllably adjusting the peak amplitude of the electrical signal, said method comprising the steps of:

mounting said photocell and said amplifier means on a circuit board,

energizing said source of light and said amplifier means and moving said movable shaft in a prescribed fashion,



monitoring the peak amplitude of the electrical signal produced by said amplifier means, and comparing it to a prescribed level,

directing a laser beam onto the variable resistance means in said amplifier means, while continuing to monitor the peak amplitude of the electrical signal and to compare it to the prescribed level, said laser beam having an intensity sufficient to alter the resistance of the variable resistance means, thereby controllably adjusting the peak amplitude of the electrical signal, and

terminating the step of directing a laser beam when it has been determined in said step of comparing that the peak amplitude of the electrical signal is substantially equal to the prescribed level.

4,319,135

TARGET PLATE FOR THERMAL IMAGE CONVERSION

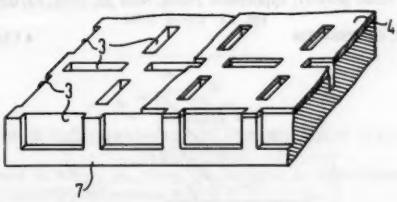
Peter-Wilhelm Steinhage, Wiesbaden, Fed. Rep. of Germany, assignor to Heimann GmbH, Fed. Rep. of Germany

Filed May 1, 1980, Ser. No. 145,746

Claims priority, application Fed. Rep. of Germany, May 30, 1979, 2922031

Int. Cl.³ H01J *31/49*

U.S. Cl. 250—332 **8 Claims**



1. A thermal image target plate for converting information-carrying thermal radiation impinging on a side of said plate into a locally distributed pattern on said plate, said target plate comprising:

a conversion layer having a plurality of recesses therein extending through said conversion layer, said recesses disposed in a network of lines forming the sides of a plurality of

regular polygons and being separated from one another by areas of said conversion layer,

said recesses disposed so as to prevent lateral thermal conductivity in said conversion layer and blurring of said pattern associated with said lateral thermal conductivity; and

an electrically conductive layer forming a signal electrode on said side of said target plate facing said impinging thermal radiation.

4,319,136

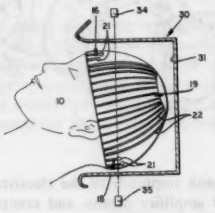
COMPUTERIZED TOMOGRAPHY RADIOGRAPH DATA TRANSFER CAP

J. Randolph Jinkins, 1430 North Ave., NE., Atlanta, Ga. 30307

Filed Nov. 9, 1979, Ser. No. 92,966

Int. Cl.³ G01N *21/00*

U.S. Cl. 250—456 **8 Claims**



1. A data transfer cap for cranial computerized tomography images comprising a substantially form-fitting dome-shaped cap including a peripheral edge and an apex, a first plurality of elongated depth markers extending from the peripheral edge toward the apex of said cap, a second plurality of elongated depth markers located diametrically across from the first plurality and also extending from the peripheral edge toward the apex of the cap, said depth markers of each plurality of depth markers being graduated in height and extending a different distance from the other markers from the peripheral edge toward the apex of the cap, and a plurality of circumferential markers located between the first and second plurality of depth markers extending from the peripheral edge toward the apex of the cap.

4,319,137

APPARATUS FOR IDENTIFYING SHEET-LIKE PRINTED MATTERS

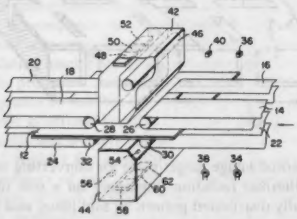
Yasushi Nakamura, Yokohama; Ko Ohtombe, Tokyo, and Akihiro Nishito, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 7, 1979, Ser. No. 91,962

Claims priority, application Japan, May 23, 1978, 53/60573

Int. Cl.³ G06K *5/00*

U.S. Cl. 250—556 **4 Claims**



1. An apparatus for identifying whether a sheet-like object is true or false, comprising:

means for detecting a plurality of positions of a moving sheet-like object to produce a plurality of position signals;

timing signal generating means for producing timing signals on the basis of the position signals;

a light source for irradiating an information detecting area lying on said object moving path to detect the information of the sheet-like object;

opto-electric converting means which produces first electric data with an amplitude corresponding to an intensity of at least one of light transmitted through the object and light reflected from the object when the object is present in the information detecting area and second electric data with an amplitude corresponding to an intensity of light omitted from the light source when the object is absent in the information detecting area;

integrating means for integrating said first electric data in terms of light detected during a reference period when the object is absent in the detecting area and said second electric data in terms of light detected during a detecting period when the object is present in the detecting area, said reference period and said detecting period being defined by the timing signals from the timing signal generating means;

memory means for storing first integrated data obtained by integrating said first electric data by said integrating means during said reference period and second integrated data obtained by integrating said second electric data by said integrating means during said detection period;

operation means for obtaining data which is a ratio between said first intergrated data and said second integrated data; and

judging means which compares said obtained data derived from the operation means with data representing a true object previously stored to judge whether the object is true or false.

4,319,138

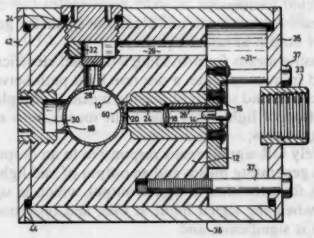
HOUSING FOR TURBIDIMETER SENSOR

Edmund G. F. Sweet, Oakville, Canada, assignor to Shaban Manufacturing Ltd., Bolton, Canada

Filed Mar. 6, 1980, Ser. No. 127,771

Int. Cl.³ G01N *15/06*

U.S. Cl. 250—576 **11 Claims**



1. A sensor for a fluidimeter comprising:

a body having a fluid flow channel therethrough;

said fluid flow channel including a translucent tube of crystaline material;

said translucent tube of crystaline substance being supported externally in a light absorbing plastics casting compound, the said plastics compound adhering to the exterior of the tube;

light channels through said casting compound terminating at said translucent tube for passing light to and from the interior of the tube wherein to measure the turbidity of the fluid in the tube;

said light channels having a cross sectional area at said tube that is small, the fracture pressure of the tube wall at the

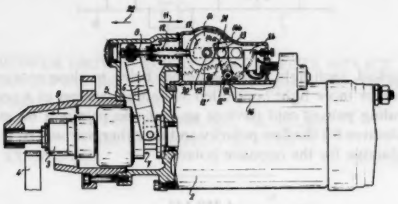
light channels being greater than the rated fluid flow pressure through the fluid flow channel.

4,319,139

STARTER-MOTOR ASSEMBLY

Alfred B. Mazzorana, Venissieux, France, assignor to Société de Paris et du Rhône, Lyons, France

Filed Dec. 11, 1979, Ser. No. 102,333
Claims priority, application France, Dec. 12, 1978, 78 35494; Nov. 21, 1979, 79 29327
Int. Cl.³ F02N 11/00
U.S. Cl. 290—38 C 20 Claims



1. In an internal-combustion starter assembly wherein a starter motor has an axially displaceable output gear meshable in a forwardly advanced position with an engine gear and unengageable with said engine gear in a backwardly retracted position, an operating mechanism comprising:

a control motor having an output shaft rotatable about a control motor axis;

a cam having a noncircular cam periphery fixed on said output shaft;

a cam follower radially engageable with said cam periphery;

means including a link between said cam follower and the starter-motor gear for displacing same between its positions on rotation of said cam by said control motor; and

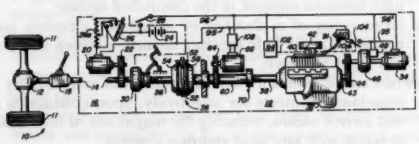
control means including a start switch for operating said control motor for displacing said starter-motor gear from its retracted position into its advanced position and then back into its retracted position and for energizing said starter motor when said starter-motor gear is in said advanced position.

4,319,140

DEMAND OPERATED POWER MANAGEMENT DRIVE SYSTEM

Ralph W. Paschke, 3324 W. Sierra Vista, Phoenix, Ariz. 85017

Filed Jul. 28, 1980, Ser. No. 172,680
Int. Cl.³ B60K 1/00
U.S. Cl. 290—45 20 Claims



1. A drive system comprising:

(a) a first driven entity;

(b) a prime mover means coupled to drive said first driven entity;

(c) a second driven entity;

(d) a power input means;

(e) a torque apportioning means coupled to receive power from said power input means and coupled to said first and said second driven entities for apportioning power received from said power input means to said first and said second driven entities in accordance with the loads thereon; and

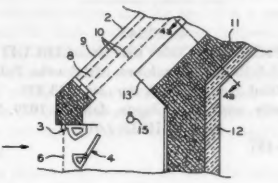
(f) locking means associated with said torque apportioning means for locking thereof to apply the power received from said power input means equally to said first and said second driven entities when the load on said first driven entity becomes less than the load on said second driven entity.

4,319,141

TURBINE CONFIGURATIONS USING WIND AND SOLAR POWER

Frederick K. Schmugge, One Salem Rd., East Brunswick, N.J. 08816

Filed Jun. 30, 1980, Ser. No. 163,940
Int. Cl.³ F02C 1/04
U.S. Cl. 290—52 2 Claims



1. A power system for channeling wind and solar heated air to drive a turbine, comprising: air inlets; means for selectively opening said air inlets in an upward direction; means responsive to wind in excess of a predetermined velocity for partially closing said inlets; means for absorbing solar radiation and for heating collected air by conduction; passageway means for collecting inlet air and channeling it into contact with said air heating means, said passageway means including a transparent extended surface portion adapted to normally face the sun and an opaque extended surface radiation absorbing portion opposite the transparent surface; an air exhaust stack spaced above said passageway means, said exhaust stack having a cross-sectional area generally normal to the direction of air flow substantially less than the cross-sectional area of said passageway means generally normal to the direction of air flow, whereby air velocity within said stack is increased; an air plenum between said passageway means and said exhaust stack arranged to collect and channel rising air into said stack; and an air powered turbine between said passageway means and the top of said exhaust stack.

4,319,142

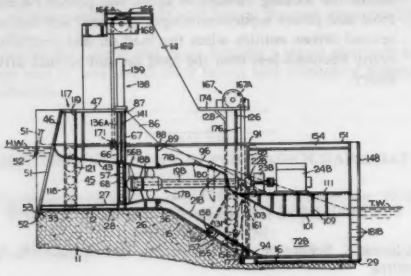
POWER GENERATION UNIT FOR SPILLWAY GATE STRUCTURES

Howard A. Mayo, Jr., York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sep. 25, 1980, Ser. No. 190,708
Int. Cl.³ E02B 9/02; F01D 15/10
U.S. Cl. 290—52 11 Claims

1. In a power generating unit for installation in a generating site having a spillway over which water flows, a fabricated frame for bodily placement on the spillway, a fabricated turbine unit carried within said frame and including a generator driven by said turbine unit;

intake closure structure movably supported by said frame to control the flow of water through said turbine unit; and



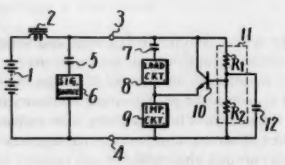
elevating means operably connected to raise the fabricated frame from the spillway to allow free flow of flood waters over the spillway.

4,319,143

IMPEDANCE CONVERTING CIRCUIT

Shinobu Itoh, 5-6-10-401, Shinakawa, Mitaka-shi, Tokyo, Japan

Filed Jan. 21, 1980, Ser. No. 113,979
Claims priority, application Japan, Jan. 19, 1979, 54-4970
Int. Cl.[3] H03F *1/08*
U.S. Cl. 307—151 **7 Claims**



1. An impedance converting circuit, comprising:
(A) an impedance circuit connected in series to a load circuit:
(B) an active element having a main current path connected in parallel across said load circuit and a control electrode connected to a reference potential: and
(C) means for supplying an input signal across both ends of said serially connected load circuit and impedance circuit.

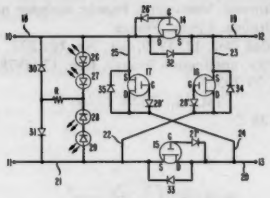
4,319,144

SINGLE POLARITY CIRCUIT

William C. King, Chatham Township, Morris County; Dennis J. Lynes, Madison, both of N.J.; Charles E. Riehm, Jr., Melbourne Beach, Fla., and Sigurd G. Waaben, Princeton, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 22, 1980, Ser. No. 152,483
Int. Cl.[3] H03K *5/22, 3/42*
U.S. Cl. 307—236 **8 Claims**

1. A circuit for maintaining a single polarity output comprising first and second inputs (**10** and **11**), first and second outputs (**12** and **13**) and means for producing the same voltage polarity at the output regardless of the voltage polarity at the input, CHARACTERIZED IN THAT said means includes: a first pair of light controlled switching devices (**14** and **15**) with one device (**14**) of the pair being coupled between the first input and the first output and the other device (**15**) coupled between the second output and the second input; a second pair of light controlled switching devices (**16** and **17**) with one device (**16**) of the pair being coupled between the second input and the first output and the other device (**17**) of the pair being coupled between the second output and the first input; at least two light emitting devices (**26, 27, 28** and **29**) coupled to said inputs so that at least one will emit light when a first polarity is applied and at least one other will emit light when the opposite polarity



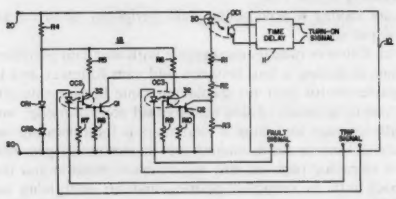
is applied, each light emitting device being in close proximity to one or more light controlled switching devices of a corresponding pair of said devices so that one pair will be made conductive for the first polarity and the other pair will be made conductive for the opposite polarity.

4,319,145

CONTROL INTERFACE CIRCUIT

Otto L. Apfelbeck, Fort Shawnee, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 10, 1980, Ser. No. 110,885
Int. Cl.[3] H03K *5/08*
U.S. Cl. 307—311 **5 Claims**



1. A control interface circuit, for providing electrical isolation between a control signal source and a controlled device and for selectively applying to the controlled device a signal for initiating a function therein wherein the control signal source may provide either a steady current or brief pulses of control current, comprising:

control input terminals for connection with the control signal source;

an optical coupler device comprising a light emitting element, connected with said control input terminals, and a light sensitive element in the controlled device;

a series string of a plurality of impedance elements connected with said light emitting element between said control input terminals;

switch means connected across a number of said plurality of impedance elements for selectively, upon conduction of said switch means, reducing the magnitude of impedance in series with said light emitting element;

means for controlling conduction of said switch means comprising a second optical coupler device comprising a light emitting element connected with secondary control input terminals and a light sensitive element connected with said switch means, said light sensitive element having a characteristic parasitic capacitance requiring a full charge before a stabilized output is produced therefrom;

means for supplying operating voltage across said light responsive element comprising impedance means connected between said control input terminals and means for limiting the operating voltage to a magnitude for fully

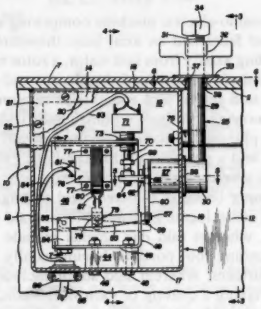
charging the parasitic capacitance of said light sensitive element in a time short compared to the duration of a pulse of control signal from said control signal source.

4,319,146

POWER DRIVEN EQUIPMENT SAFETY DEVICE

Charles J. Wires, Sr., Wooster, Ohio, assignor to The Will-Burt Company, Orrville, Ohio

Filed May 23, 1980, Ser. No. 152,659
Int. Cl.³ H02H *7/08, 11/00*
U.S. Cl. 307—328 **18 Claims**



10. In an improved power driven piece of equipment of the type having an electric drive motor, a work performing mechanism located within a compartment of the equipment and driven by the electric motor, a door providing access into the compartment, and electric circuit means operatively connecting the drive motor to a supply of electric power, wherein the improvement includes safety latch means mounted on the equipment and engageable with the access door to prevent access into the mechanism compartment until the drive motor is stationary, said safety latch means including:

(a) bolt means mounted on the equipment and engageable with the access door, said bolt means being movable between locked and unlocked positions with respect to said access door;

(b) sensor control means including a voltage sensitive relay operatively connected with the electric circuit means and responsive to the back EMF voltage produced by the drive motor;

(c) solenoid means connected with said electric circuit means and controlled by the sensor control means, with said solenoid means being energized in relationship to the back EMF voltage produced by the rotation of the drive motor; and

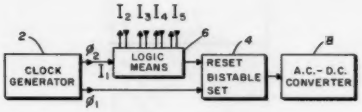
(d) lever means movable into locking engagement with the bolt means upon energization of the solenoid means when the bolt means is in locked position to maintain the bolt means in locked position with the access door until rotation of the drive motor approaches zero, whereupon the sensor control means deenergizes the solenoid means to move the lever means out of locking engagement with the bolt means.

4,319,147

MONITORING APPARATUS

James E. Carpenter, Orpington, and Brian A. Goody, Carshalton, both of England, assignors to Fisher Controls International, Inc., Clayton, Mo.

Filed Jan. 17, 1980, Ser. No. 112,831
Claims priority, application United Kingdom, Jan. 17, 1979, 01696/79
Int. Cl.³ H03K *19/007*
U.S. Cl. 307—442 **8 Claims**



1. A monitoring apparatus comprising:

bistable means having a set input, a reset input and an output;

trigger means connected to said inputs of said bistable means for applying a first train of pulses to one of the said inputs of the bistable means and for applying a second train of pulses of the same frequency as and different phase to said first train of pulses to the other one of said inputs of the bistable means in response to a predetermined combination of constant input gating signals; and

an output device responsive to oscillation of said bistable means between its stable states, said trigger means comprising:

generator means which produces said first train of pulses and a third train of pulses of the same frequency and different phase; and

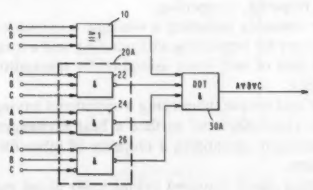
logic means having a primary input to which said third train of pulses is applied, m secondary inputs and an output and being arranged to produce at its output, when said combination of constant input gating signals are applied to at least n of its secondary inputs, said second train of pulses having the same frequency and phase as said third train of pulses.

4,319,148

HIGH SPEED 3-WAY EXCLUSIVE OR LOGIC CIRCUIT

Shashi D. Malaviya, Fishkill, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 28, 1979, Ser. No. 107,810
Int. Cl.³ H03K *19/21, 19/013*
U.S. Cl. 307—471 **13 Claims**



1. A 3-way Exclusive OR logic circuit having an essentially single stage logic delay comprising:

a 3-way OR logic circuit for providing a logical "1" output signal when one or more of three inputs thereof receive a logical "1" operand signal;

a 3-way Two And Only Two logic circuit for providing a logical "0" output signal when two and only two of three inputs thereof receive logical "1" operand signals and providing logical "1" output signals in all other cases;

the three inputs of said 3-way OR logic circuit and the three inputs of said 3-way Two And Only Two logic circuit

receiving the same corresponding logical operand signals, respectively;

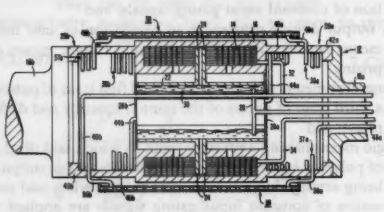
a DOT-AND logical connecting means for DOT-ANDing the outputs of said 3-way OR logic circuit and said 3-way Two And Only Two logic circuit, whereby providing a logical "1" output signal when either one or all of said three inputs of said 3-way OR logic circuits and said 3-way Two And Only Two logic circuit receive logical "1" operand signal.

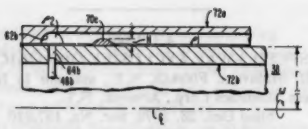
4,319,149

SUPERCONDUCTING GENERATOR WITH IMPROVED THERMAL TRANSIENT RESPONSE

Phillip W. Eckels, Penn Hills Twp., Allegheny County, Pa., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Apr. 24, 1980, Ser. No. 143,205
Int. Cl.³ H02K *9/00*
U.S. Cl. 310—52 **15 Claims**





1. A superconducting generator with improved thermal transient response, comprising:

a rotor assembly including a winding, a cylindrical support structure for supporting said winding, and a torque tube at each end of said rotor assembly for transmitting torque thereto;

each of said torque tubes being a cylindroid having along its inner circumferential surface a heat exchanger attached thereto and comprising a plurality of tubes for directing coolant;

a radiation shield disposed cylindrically about and in close proximity to said rotor assembly, said radiation shield acting to intercept radiant heat from the ambiance;

said radiation shield having therein a plurality of axial passages for directing a coolant through the shield;

means for directing said coolant from each of said heat exchangers into said shield's coolant passages;

means for discharging said coolant from said shield to a preselected one of said heat exchangers; and

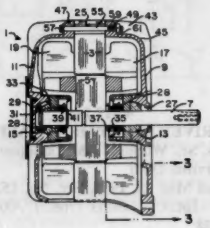
means disposed in the coolant passages before the discharging means for regulating a flow of fluid from each of the axial passages to ensure substantially equal flow rates through each of the axial passages.

4,319,150

END SHIELD MOUNTING SYSTEM FOR DYNAMOELECTRIC MACHINE

Joseph T. Roddy, Ballwin, and William R. Butler, Fenton, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 780,228, Mar. 22, 1977, Pat. No. 4,170,057.
This application Apr. 23, 1979, Ser. No. 32,538
Int. Cl.³ H02K *5/16*
U.S. Cl. 310—89 **10 Claims**



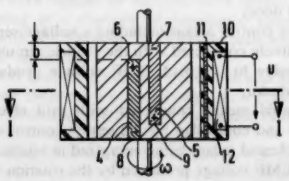
1. In a dynamo-electric machine comprising a stator having a pair of end faces and an axial bore therethrough, and end turns extending axially from said stator, a rotor received in said bore, a rotor shaft, a pair of end shields, one end shield for each end face of said stator, said end shields surrounding said end turns and carrying bearings within which said rotor shaft is journaled, a plurality of mating apertures in said stator and said end shields, and a plurality of through-bolts extending axially through said apertures, the improvement wherein said bearings are self-aligning bearings, wherein said through-bolts constitute the sole radial locating means between said stator and said end shields, wherein said end shields include a plurality of radially extending foot portions having axially inner and axially outer surfaces, wherein said stator includes a laminated stator core having a coating of varnish thereon, said through-bolts engaging said outer surfaces of said foot portions and holding said inner surfaces of said foot portions against an axially outer face of said laminated stator core, and wherein said axially inner surfaces of said foot portions include means for cutting into said varnish.

4,319,151

PULSE GENERATOR

Hermann Klotz, Heidelberg, Fed. Rep. of Germany, assignor to Teldix G.m.b.H., Heidelberg, Fed. Rep. of Germany

Filed Mar. 18, 1980, Ser. No. 131,547
Int. Cl.³ H02K *21/00*
U.S. Cl. 310—152 **17 Claims**



1. A pulse generator comprising: a stator; a rotor of magnetically nonconducting material rotatable with respect to said stator; an annular bobbin made of a magnetically nonconducting material; a coil of wire mounted on said bobbin to be concentric with said rotor; at least one Wiegand wire mounted on said stator; and at least two permanent magnets carried by said rotor, and oriented parallel to, and polarized in respectively

opposite directions relative to, the axis of rotation of said rotor, said two magnets being spaced apart in the circumferential direction of said rotor by a small first distance and being offset from one another by a second distance in the direction of the axis of rotation of said rotor; said magnets, said coil and said Wiegand wire being positioned relative to one another in a manner to cause said Wiegand wire to generate pulses in said coil based on the Wiegand effect upon rotation of said rotor, and the magnetic field produced by said magnets being of such an asymmetrical form with respect to said Wiegand wire that said pulses all have only a positive or negative polarity depending on the sense of rotation of the said rotor.

4,319,152

LAMINATED WINDING FOR ELECTRIC MACHINES

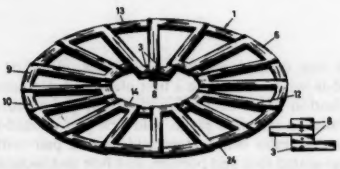
Adrianus W. van Gils, Jacob Pronkstraat 2A, Den Haag, Netherlands

Continuation of Ser. No. 711,556, Aug. 4, 1976, abandoned. This application Nov. 20, 1978, Ser. No. 961,865

Claims priority, application Netherlands, Jul. 12, 1976, 7607705

Int. Cl.³ H02K *3/04*

U.S. Cl. 310—201 **4 Claims**



1. A laminated winding for generating magnetic poles of a magnetic field in electric machines, characterized in that the winding is composed of a multiple of stacked, electrically connected, mutually isolated circular patterns of plate material of the same shape, each having an insulating layer on one side and forming electrical conductors, wherein each pattern forms a wave winding and is composed of a plurality of radially arranged strips which are electrically connected at their ends by outer and inner circumferential strips of electrical conductor material alternatively located on the outer circumference and on the inner circumference, respectively, so that magnetic poles are generated upon passage of current through each wave winding, and wherein a first adjacent radial strip and a second adjacent radial strip in each pattern are elongated towards the center of said pattern, said second adjacent radial strip having an inner end, said first adjacent radial strip having one of said inner circumferential strips overlapping the inner end of said second adjacent radial strip, each of said magnetic poles having four cross-section sides and being defined at three of said four cross-section sides by two of said radially arranged strips and one of said circumferential strips, and wherein said stacked patterns are stacked mutually displaced one with respect to another such that the respective outer and inner circumferential strips of adjacent said stacked patterns together define each magnetic pole, each pair of adjacent ones of said stacked patterns being the mirror image of the other said stacked patterns, said first and second adjacent radial strips of said stacked patterns being arranged one on top of another in alternating fashion so that each said first adjacent radial strip has its inner circumferential strip adjacent to said inner end of at least one of said second adjacent radial strips of said stacked patterns, successive said stacked patterns being electrically connected in series such that, upon passage of current through all said stacked patterns, a plurality of magnetic poles of successively opposite polarity is produced.

4,319,153

ELECTRIC MOTOR WITH CONTROLLABLE MECHANICAL WEAR AND SPARK GENERATION

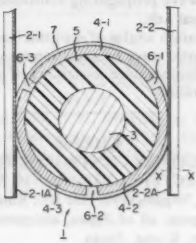
Takaichi Mabuchi, Matsudo, Japan, assignor to Mabuchi Motor Co. Ltd., Tokyo, Japan

Filed Apr. 4, 1979, Ser. No. 27,005

Claims priority, application Japan, Apr. 18, 1978, 5345570

Int. Cl.³ H02K *13/10*

U.S. Cl. 310—221 **4 Claims**



1. In electric motor with controllable mechanical and electrical wear and comprising a central rotor shaft, an insulating cylinder surrounding said shaft, a commutator surrounding said cylinder and having a plurality of conductive arcuate segments, each of said segments being equally spaced from the adjoining ones by a gap, and a plurality of metal brushes having sliding edges in tangential pressure contact with said arcuate segments, the improvement characterized by an electrically conductive spark-quenching grease coating the outer surface of said arcuate segments and filling said gaps whereby mechanical wear caused by excessive pressure of said brushes on said commutator and spark generation caused by insufficient pressure of said brushes are concurrently and controllably reduced by said grease.

4,319,154

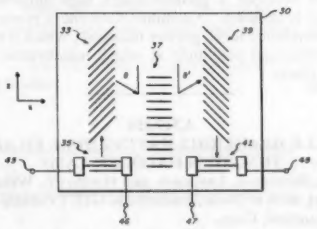
TEMPERATURE INSENSITIVE REFLECTIVE ARRAY S.A.W. DEVICE

Leland P. Solie, Acton, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,953

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—313 D **7 Claims**



1. Acoustic wave processing apparatus comprising:

substrate means for supporting acoustic waves at a surface thereof,

acoustic wave reflective array means having a longitudinal axis and elements disposed substantially perpendicular to said longitudinal axis, adapted to convert an acoustic wave incident thereto at an angle into an acoustic wave reflected at an emergent angle substantially equal and opposite to said incident angle,

first and second acoustic wave propagation array means

disposed parallel to and equally spaced from said acoustic wave reflective array means,

said first acoustic wave propagation means being adapted to convert acoustic wave energy propagating substantially parallel to said longitudinal axis into said wave incident at said angle to said acoustic wave reflective array means, and

said second acoustic wave propagation means being adapted to convert said wave reflected at said emergent angle from said acoustic wave reflective means into an acoustic wave propagating substantially parallel to said longitudinal axis,

whereby propagation angles of acoustic waves emerging from said second acoustic wave propagation means are substantially independent of temperature variations of said acoustic wave processing apparatus.

4,319,155

NEBULIZATION CONTROL SYSTEM FOR A PIEZOELECTRIC ULTRASONIC NEBULIZER

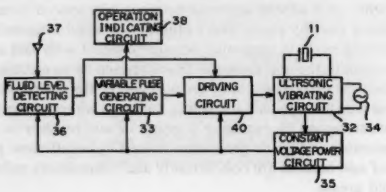
Hideharu Nakai, Nagaokakyo; Isao Kai, Kameoka, and Hirohito Yamamoto, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Dec. 11, 1979, Ser. No. 102,534

Claims priority, application Japan, Jan. 9, 1979, 54-1836

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—316 **5 Claims**



1. A nebulization control system for an ultrasonic nebulizer, comprising:

a variable pulse oscillating circuit,

an ultrasonic vibrating circuit, the vibration amplitude of which depends upon the output of said variable pulse oscillating circuit, and

an ultrasonic vibrator which is energized by the output of said ultrasonic vibrating circuit,

wherein said ultrasonic vibrator is caused to vibrate in alternation between a predetermined high amplitude level which is sufficient to nebulize fluid and a predetermined low amplitude level, greater than zero, which is at or near the maximum amplitude at which nebulization will not take place.

4,319,156

VEHICLE HEADLIGHT HAVING DUAL FILAMENT TUNGSTEN HALOGEN LAMP

Roland L. Bienvenue, Lawrence, and Herbert L. Walton, Newburyport, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Division of Ser. No. 938,999, Sep. 1, 1978, Pat. No. 4,262,229. This application Aug. 11, 1980, Ser. No. 176,899

Int. Cl.³ H01J *5/16*

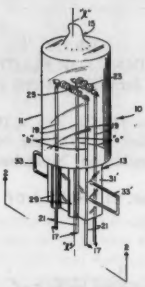
U.S. Cl. 313—113 **4 Claims**

1. A vehicle headlight comprising:

a substantially concave glass member including an internal surface having a layer of reflective material thereon:

a transparent glass cover hermetically sealed to said concave glass member:

a tungsten-halogen incandescent lamp positioned within said concave glass member, said incandescent lamp including a substantially tubular vitreous envelope having a press-sealed first end portion and a tip-sealed second end portion, said press-sealed first end portion of said glass envelope including a pair of opposing longitudinal side walls each having two undulating portions therein, a fill of an inert gas and halogen within said envelope, first and second pairs of straight and parallel lead-in wires sealed within said press-sealed end portion of said envelope, each of said lead-in wires having a first end projecting within said envelope and a second end extending from said envelope, the portions of each of said lead-in wires sealed within said press-sealed first end portion of said glass envelope being substantially positioned within a respective one of said undulating portions, said first pair of lead-in wires occupying a first plane and said second pair of lead-in wires occupying a second plane substantially parallel to said first plane, said first pair of lead-in wires being laterally offset from said second pair within said press-sealed first end portion, and first and second spaced apart tungsten filaments supported within said envelope by said first ends of said first and second pairs of lead-in wires, respectively; and



a plurality of terminals spacedly positioned within and projecting from said concave glass member, said lead-in wires electrically connecting said terminals to said tungsten filaments.

4,319,157

HIGH PRESSURE MERCURY VAPOR DISCHARGE LAMP

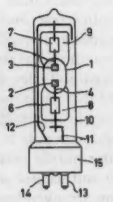
Bertus De Vrijer, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 21, 1980, Ser. No. 113,844

Claims priority, application Netherlands, Feb. 26, 1979, 7901480

Int. Cl.³ H01J *61/20*

U.S. Cl. 313—225 **1 Claim**



1. A high-pressure mercury vapor discharge lamp having a discharge vessel which is closed in a vacuum-tight manner, is provided with electrodes and comprises a rare gas, mercury and a tin halide, characterized in that the discharge vessel contains tin iodide, tin chloride and tin bromide, the molar fractions of iodine, bromine and chlorine present in the dis-

charge vessel expressed in terms of the total iodine, bromine and chlorine being at least 0.20, at least 0.25 and at least 0.05 respectively, the molar fraction of bromine being from 0.25 to 0.55 and the molar fraction of chlorine being from 0.10 to 0.25, said discharge vessel containing from 3 to 35 mg of mercury, and from 5 to 25 micromole of halogen per cubic centimeter of its internal volume, and the molar ration of halogen to tin is from 0.1 to 2.5, said discharge vessel also containing at least one of the elements Li, Na, In, Pb, Bi, Zn and Ga, in a total quantity of 0.005 to 10 micromole per cubic centimeter of its internal volume for color point correction of the emitted radiation, and when present the elements Li and Na being present as a chloride and the elements In, Pb, Bi, Zn and Ga as such or as a halide other than a fluoride.

4,319,158

ELECTRODE FOR DISCHARGE LAMP

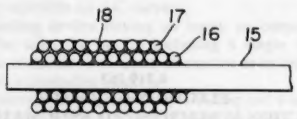
Keiji Watanabe; Masato Saito, and Keiji Fukuyama, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1979, Ser. No. 108,173

Claims priority, application Japan, Dec. 29, 1978, 53-164286; Dec. 29, 1978, 53-164287; Dec. 29, 1978, 53-164288; Jun. 22, 1979, 54-78867; Jun. 22, 1979, 54-78868; Jun. 22, 1979, 54-78869

Int. Cl.³ H01J *1/14, 19/06;* H01K *1/04*

U.S. Cl. 313—346 R **2 Claims**



1. In an electrode for a discharge lamp comprising an electrode substrate and an electron emission material on said electrode substrate, the improvement comprising said electron emission material consisting of a combination of 0.5 to 80 mole % of lanthanum oxide with 99.5 to 20 mole % of ytrrium oxide.

4,319,159

CAMERA TUBE SELENIUM TARGET INCLUDING ARSENIC INCREASING IN CONCENTRATION FROM RADIATION SIDE

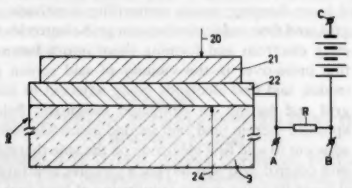
Petrus J. A. M. Derks; Joannes H. J. van Dommelen, and Jan Dieleman, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 16, 1979, Ser. No. 39,537

Claims priority, application Netherlands, May 19, 1978, 7805418

Int. Cl.³ H01J *29/45, 31/38*

U.S. Cl. 313—386 **8 Claims**



1. A camera tube for detecting a radiation image comprising an electron source and a target having two sides, one side of said target being scanned, in operation, by an electron beam emanating from said source, the other side of said target being irradiated, in operation, by the radiation image to be detected, said target comprising a signal electrode and a selenium-containing vitreous layer having two sides, one side of said layer being scanned, in operation, by an electron beam emanating from said source, the other side of said target being irradiated, in operation, by the radiation image to be detected said signal electrode being provided on the radiation-receiving side of the layer, characterized in that the selenium containing vitreous layer further comprises arsenic in a connection which increases continuously from the radiation-receiving side of the layer to the scanned side of the layer, the arsenic concentration at the radiation-receiving side of the layer being less than or equal to 13 atomic % but greater than or equal to 1.5 atomic %.

4,319,160

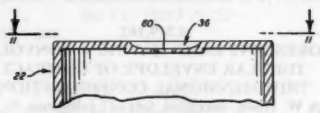
ONE PIECE ASTIGMATIC GRID FOR COLOR PICTURE TUBE ELECTRON GUN AND METHOD OF MAKING SAME

Donald L. Say, Waterloo, N.Y., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

Division of Ser. No. 94,405, Nov. 15, 1979. This application Dec. 10, 1980, Ser. No. 214,916

Int. Cl.³ H01J *29/02*

U.S. Cl. 313—458 **1 Claim**



1. A one piece grid which provides an astigmatic lens for a cathode ray tube electron gun, said grid comprising: a functional grid area defined by upper and lower surfaces defining a given thickness therebetween; a lanced, apertured section in said grid area having an upper surface which lies below said lower surface of said grid area, said upper surface of said grid area and said upper surface of said lanced section defining a trough having a given width; said lanced section being coined to have a thickness less than its original thickness and a width greater than said given width.

4,319,161

LUMINESCENT SCREEN AND LOW PRESSURE MERCURY VAPOR DISCHARGE LAMP CONTAINING THE SAME

Bob Looye; Johannes T. W. deHair, and Cornelis Bakker, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,505

Claims priority, application Netherlands, Jul. 23, 1979, 7905680

Int. Cl.³ C09K *11/46;* H01J *1/63*

U.S. Cl. 313—486 **10 Claims**

1. A luminescent screen, comprising a luminescent metaborate, having a monoclinic crystal structure provided on a support, characterized in that the metaborate has a composition defined by the formula

$$(Y, La)_{1-x-y-z}Ce_xGd_yTb_z(Mg, Zn)_{1-p}Mn_pB_5O_{10},$$

wherein,

if $y=z=p=0$, it holds that $0.01 \leqq x \leqq 1.0$,

if $z=p=0$, it holds that

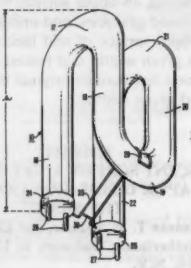
$0.01 \leqq x \leqq 1-y$
$0.02 \leqq y \leqq 0.80$,
if $p=0$, it holds that
$0.01 \leqq x \leqq 1-y-z$
$0 \leqq y \leqq 0.98$
$y+z \leqq 0.99$
$0.01 \leqq z \leqq 0.75$,
if $z=0$, it holds that
$0.01 \leqq x \leqq 1-y$
$0 \leqq y \leqq 0.99$
$0.01 \leqq p \leqq 0.30$.
and if both $p \neq 0$ and $z \neq 0$, it holds that
$0.01 \leqq x \leqq 1-y-z$
$0 \leqq y \leqq 0.98$
$0.01 \leqq z \leqq 0.75$
$y+z \leqq 0.99$
$0.01 \leqq p \leqq 0.30$ and wherein when $p=0$ and $x+y+z=1$, up to 20 mole % of the B is replaceable by Al and/or Ga; when $z=0$ and $x+y=1$, up to 20 mole % of the B is replaceable by Al and/or Ga; and when both $p \neq 0$ and $z \neq 0$ and $x+y+z=1$, up to 20 mole % of the B is replaceable by Al and/or Ga.

4,319,162

FLUORESCENT LAMP HAVING A CONVOLUTED TUBULAR ENVELOPE OF COMPACT TRIDIMENSIONAL CONFIGURATION

Frederick W. Hoeh, deceased, late of Livingston, N.J. by Inga Hoeh, executrix, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 13, 1979, Ser. No. 11,836
Int. Cl.[3] H01J *61/30, 61/44*
U.S. Cl. 313—487 **10 Claims**



1. A fluorescent lamp adapted to be operated at a predetermined power loading and having a phosphor-coated tubular envelope of convoluted tridimensional configuration that contains a pair of spaced electrodes and an ionizable medium which sustains an electric discharge between the electrodes when the lamp is energized, said convoluted envelope comprising;

a single piece of glass tubing that is sealed at each end and conformed to provide four substantially straight segments that are joined by three curved segments and together therewith form three generally U-shaped sections that define a single discharge channel of elongated tortuous configuration,

each of the conjoined generally U-shaped sections of said convoluted tubular envelope being disposed in a different plane and being so oriented that the four substantially straight segments extend in the same general direction and the discharge channel is terminated by two of the said substantially straight segments that are proximate one another and to the generally U-shaped section which comprises the medial part of the envelope so that the substantially straight segments of said envelope are disposed in substantially quadrangular columnar array and provide a tridimensional light source of compact size and high brightness when the lamp is energized,

said electrodes being located within the substantially straight segments of the envelope which terminate the discharge channel and are proximate one another so that the tridimensional fluorescent lamp is of single-ended construction,

base means secured to the sealed ends of the glass tubing and having exposed terminals that are connected to the respective electrodes,

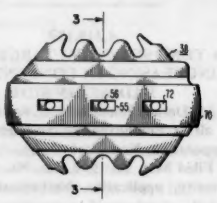
the three generally U-shaped sections being of such size that the convoluted tubular envelope has (a) an overall height dimension which does not exceed 24.76 cms., (b) an overall width dimension which does not exceed 13.97 cms., and (c) defines an arc path of such length that the compact tridimensional fluorescent lamp generates up to about 2850 lumens at an efficacy of up to about 57 lumens per watt when the lamp is operated at said predetermined power loading.

4,319,163

ELECTRON GUN WITH DEFLECTION-SYNCHRONIZED ASTIGMATIC SCREEN GRID MEANS

Hsing-Yao Chen, Landisville, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,685
Int. Cl.[3] H01J *29/46, 29/56*
U.S. Cl. 315—14 **8 Claims**



1. In a cathode ray tube, a cathodoluminescent screen and an electron gun comprising beam forming means and beam focusing means for projecting a electron beam onto said screen,

said beam forming means comprising a cathode, a control grid, and first and second screen grid electrodes for generating electrons and forming them into a beam having a first cross-over in the vicinity of said screen grid electrodes; said first electrode being adjacent to said control grid and having an elongated astigmatic field-forming aperture therein, and said second electrode being closely adjacent to said first electrode on the side thereof opposite said control grid and having a circular aperture therein;

said beam focusing means comprising at least two apertured electrodes for establishing a main focus lens for focusing said electron beam so as to image said first cross-over on said screen; and

first means applying to said first screen grid electrode a substantially parabolic shaped signal which is synchronized with a horizontal beam-scanning signal, and second means applying a fixed DC operating voltage to said second screen grid electrode.

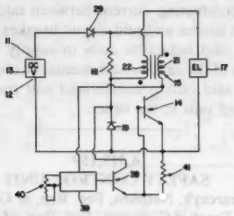
4,319,164
POWER FACTOR COMPENSATING ELECTROLUMINESCENT LAMP DC/AC INVERTER

Harry W. Tulleners, Urbana, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 61,929, Jul. 30, 1979. This application Feb. 20, 1981, Ser. No. 236,368

Int. Cl.³ H05B *37/02, 39/04, 41/36*

U.S. Cl. 315—219 **5 Claims**



1. A power factor compensating DC/AC inverter circuit which comprises:

(a) a source of direct electrical current having a positive terminal and a negative terminal;

(b) a lamp operable on AC current;

(c) a switching device having an input, an output, and a controller side, the device including a single transistor having a collector as an input, an emitter as an output, and a base as a controller side;

(d) a transformer having a primary winding and a secondary winding, the primary winding being in series with the positive terminal of the source of direct electrical current and the input to the switching device, the output of the switching device being connected to the negative terminal of the source of direct electrical current, the secondary winding being in series with the lamp and in electrical communication with the source of direct electrical current, such that the secondary winding doubles as both an output and a feedback winding and the lamp doubles as both a load and limiting impedance for the controller side of the switching device;

(e) a first diode having a cathode side connected to the end of the secondary winding opposite the lamp;

(f) means for dimming the lamp, including:

(I) a monostable multivibrator unit connected to the collector of the transistor of the switching device;

(II) a variable resistor connected to the unit;

(III) a dimming transistor having a base connected to the unit, an emitter connected to the base of the transistor of the switching device, and a collector connected to the cathode side of the first diode; and

(IV) a resistor wired between the base of the transistor of the switching device and the negative terminal of the source of direct electrical current, to prevent undesireable leakage of current into the base of the transistor of the switching device.

4,319,165
ELECTRONIC FLASH APPARATUS WITH FUNCTION TO BOUNCE FLASH

Kaoru Kuraishi, 4-18-19-1405, Nerima, Nerima-ku, Tokyo, and Toru Goto, 1-8-9, Satsukigaoka, Chiba-shi, Chiba-ken, both of Japan

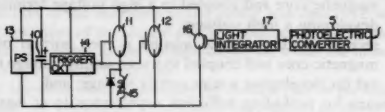
Filed Oct. 5, 1978, Ser. No. 948,801

Claims priority, application Japan, Oct. 13, 1977, 52-122874

Int. Cl.³ H05B *41/32*

U.S. Cl. 315—241 P **7 Claims**

1. An electronic flash apparatus comprising: a first flash discharge tube so arranged as to be fixedly directed toward a subject, a second flash discharge tube arranged so as to be directed toward an arbitrary direction, circuit means for synchronously flashing said first and second flash discharge tubes, and circuit means for changing the ratio of the quantity of light



from said first discharge tube to the quantity of light from said second discharge tube.

4,319,166
METHOD AND APPARATUS OF AUTOMATICALLY PROCESSING AND CORRECTING THE BLOCKING VOLTAGE OF AN ELECTRON GUN

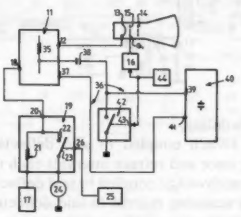
Andre Lavigne, Montrouge, France, assignor to Videocolor, S.A., France

Filed Jul. 9, 1980, Ser. No. 167,166

Claims priority, application France, Jul. 9, 1979, 79 17708

Int. Cl.³ H01J *29/52*

U.S. Cl. 315—384 **6 Claims**



1. A method for correcting a blocking voltage generated at the output of an amplifier connected to the cathode of a cathode-ray tube electron gun and minimizing the effect of leakage current between a tube filament and cathode, the method comprising the steps:

periodically driving the amplifier with a selected input signal resulting in a DC stabilizing voltage at the output thereof;

producing a perturbation of cathode current causing the gun to momentarily conduct beyond a predetermined level corresponding to the black picture threshold of the gun;

sensing a response signal from the cathode current perturbation;

capacitively coupling the sensed response signal to a memory which stores the response signal; and

correcting the blocking voltage during the normal gun operation in accordance with the stored signal.

4,319,167
HIGH FREQUENCY FERRORESONANT POWER SUPPLY FOR A DEFLECTION AND HIGH VOLTAGE CIRCUIT

Frank S. Wendt, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 7,815, Jan. 30, 1979, abandoned. This application Apr. 28, 1980, Ser. No. 144,150

Int. Cl.³ H01J *29/70*

U.S. Cl. 315—411 **26 Claims**

1. A ferroresonant power supply for a deflection and high voltage circuit, comprising:

a source of alternating current voltage;

a ferroresonant transformer comprising:

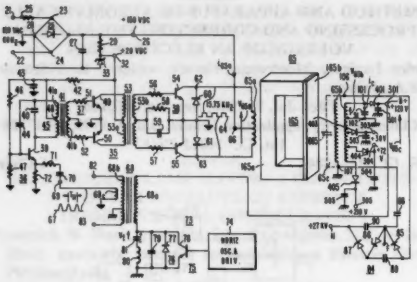
a magnetic core;

a first winding coupled to said source of alternating current voltage;

a high voltage winding wound around a core portion of said magnetic core and coupled to a high voltage terminal for developing a high voltage;

a second winding wound around a core portion of said magnetic core and coupled to a scan supply voltage terminal for developing a scan supply voltage; and

means for providing sufficient capacitance to at least one winding of said ferroresonant transformer for generating circulating currents for saturating the core portions under said high voltage and second windings each cycle of said alternating current voltage for providing a regulated high voltage and a regulated scan supply voltage;



a deflection winding;

a deflection switch coupled to said deflection winding for generating trace and retrace intervals each deflection cycle;

a source of trace voltage coupled to said deflection winding for developing scanning current in said deflection winding;

first means for coupling said regulated scan supply voltage to said source of trace voltage to develop said trace voltage from said regulated scan supply voltage;

an ultor terminal for providing an ultor accelerating potential; and

high voltage means coupled to said high voltage terminal and to said ultor terminal for developing said ultor accelerating potential from said regulated high voltage.

4,319,168

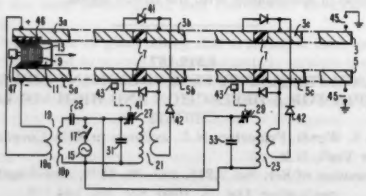
MULTISTAGE ELECTROMAGNETIC ACCELERATOR

George A. Kemeny, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 28, 1980, Ser. No. 116,118

Int. Cl.³ H02K *41/02*

U.S. Cl. 318—135 **28 Claims**



1. An electromagnetic accelerator comprising generally parallel conductive rails having separate rail segments along their length;

a DC current source;

a plurality of induction coils having a primary portion and a secondary portion;

a make switch connected in series with the DC current source;

circuit breaker means including separate circuit breaker means connected in series with each primary portion of each induction coil;

the separate circuit breaker means and primary portion of the induction coils being connected in parallel across the make switch and DC current source;

the secondary portion of each induction coil being connected to the leading end of the separate rail segments;

means for conducting current between said rails; and

said current source and said circuit breaker means cooperating with said induction coils to supply current to serial segments of the rails as said means for conducting current between said rails is accelerated and traverses from one end of said rails to the other.

4,319,169

SAFETY CONTROL UNIT

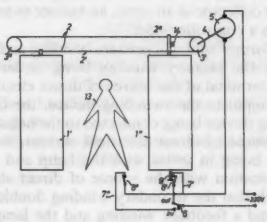
Eckhard Kucharczyk, Netphen, Fed. Rep. of Germany, assignor to Siegenia-Frank AG, Siegen, Fed. Rep. of Germany

Continuation of Ser. No. 31,547, Apr. 9, 1979, abandoned. This application Oct. 27, 1980, Ser. No. 201,203

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818461

Int. Cl.³ H02P *1/42*

U.S. Cl. 318—266 **7 Claims**



1. Safety control unit for a closure member movable between an open position and a closed position, comprising:

(a) a single-phase A.C. synchronous motor having a rotor that rotates either clockwise or counter-clockwise and which automatically reverses its direction of rotation when the rotor encounters a braking resistance,

(b) drive means operatively connected to the rotor and the closure member for causing the closure member to move to the closed position when the rotor rotates in one direction and to move to the open position when the rotor rotates in the opposite direction,

(c) means for obstructing the movement of the closure member in the open and closed positions to impart a braking resistance to the rotor,

(d) a source of electrical power,

(e) a first limit switch connected to the motor and which reverses when the closure member is in the closed position,

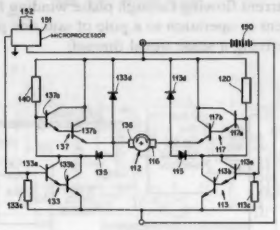
(f) a second limit switch connected to the motor and which reverses when the closure member is in the open position, and

(g) a manually-operated control switch for selectively connecting either of said first and second limit switches to the source of electrical power, whereby energization of the motor through said control switch causes the rotor to rotate in said one direction when the closure member is in the open position and in the opposite direction when the closure member is in the closed position, the direction of rotation of the rotor automatically reversing when the closure member is obstructed during its movement in either direction.

4,319,170
MOTOR CONTROL METHOD AND SYSTEM

Allan L. Brent, c/o Dynamic Systems Design, 145 Palisade St., Dobbs Ferry, N.Y. 10522

Filed Apr. 21, 1980, Ser. No. 141,766
Int. Cl.³ H02P *3/14*; H02K *23/66*
U.S. Cl. 318—376 **2 Claims**

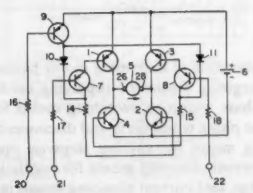


1. A motor-control circuit consisting of:
a direct-current motor having a pair of energization terminals;
a direct-current source;
a pair of direction-controlling switches each connected between a pole of said source and one terminal of said motor through a respective diode, each of said direction-controlling switches being formed as a Darlington transistor pair; and
a respective transistor switch having an emitter-collector network connected between each terminal of said motor and the other pole of said source, and a base connected between the respective diode and a biasing resistor whereby upon operation of one of said direction-controlling switches a corresponding one of said transistor switches blocks and the other of said transistor switches is rendered conductive to drive said motor in one sense and upon inactivation of said one of said direction-controlling switches said transistor switches are effective to brake said motor, each of said transistor switches consisting of a pair of Darlington-connected transistors such that an emitter-collector network of one of the transistors of each Darlington-connected pair is connected directly to each terminal of said motor, each transistor switch, its respective resistor and diode connected to each terminal being electrically symmetrical to the transistor switch, its respective resistor and diode connected to the other terminal.

4,319,171
MOTOR CONTROL DEVICE

Ryuzo Motoori, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 11, 1980, Ser. No. 167,912
Claims priority, application Japan, Jul. 23, 1979, 54-100581[U]
Int. Cl.³ H02P *7/14*
U.S. Cl. 318—379 **15 Claims**

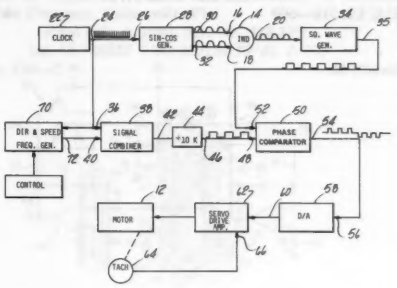


1. A motor control device comprising: first and second pairs of transistors, each transistor being connected to a voltage source, the first pair of transistors being adapted for connection to terminals of the motor and operative when both transistors of the first pair are conducting to connect the motor to the voltage source such that the motor is driven in a forward direction, the second pair of transistors being adapted for connection to the terminals of the motor and operative when both transistors of the second pair are conducting to reversibly connect the motor to the voltage source such that the motor is driven in a reverse direction;
first selective means for rendering the first pair or the second pair of transistors conductive alternately to drive the motor in the forward direction or the reverse direction; and
second selective means for rendering one transistor of the first pair and one transistor of the second pair conductive to form a closed loop which short-circuits the motor and causes dynamic braking of the motor.

4,319,172
NUMERICAL CONTROL SYSTEM

Ryszard Sieradzki, Rochester, Mich., assignor to Tracer Control Company, Hazel Park, Mich.

Filed Feb. 25, 1980, Ser. No. 124,294
Int. Cl.³ G05B *1/02*
U.S. Cl. 318—608 **13 Claims**



1. A system for controlling the position of a movable member relative to a stationary member, said system comprising:
a reversible motor means for moving said movable member along a predetermined path of movement;
a position transducer operatively connected between said movable and stationary members, said transducer having a pair of inputs and an output;
clock means for generating an output frequency at a highly elevated first frequency;
a sinusoidal wave generator having an input directly connected to the clock means output, said wave generator being operable to produce a pair of sinusodial wave outputs at a predetermined second frequency, said second frequency being equal to said first frequency divided by a predetermined constant, said sinusoidal wave outputs having a predetermined and constant phase shift difference relative to each other and wherein each wave generator output is connected to one transducer input;
said transducer being operable to vary the phase of its output signal in dependence upon the relative positions of said movable and stationary members;
signal combiner means having two inputs and an output for adding the input signals together to form the output signal, said clock means output being connected to one of said combiner inputs;
pulse generator means for generating an output train of pulses of a frequency and polarity corresponding to the desired speed and direction of movement of the movable member relative to the stationary member, said pulse generator means output being connected to the other input of the signal combiner, and said pulse generator

means having two inputs, said clock means output being connected to one pulse generator means input for synchronizing said pulse generator means with said first frequency and a control circuit which generates a signal on an output indicative of the desired speed and direction of movement of the movable member, said control circuit output being connected to the other pulse generator means input;

means for converting the frequency of the combiner means output to said second predetermined frequency by dividing said combiner means output by said predetermined constant;

means for comparing the phase of the frequency converter means output and the transducer output and for generating an output signal representative of the phase difference; and

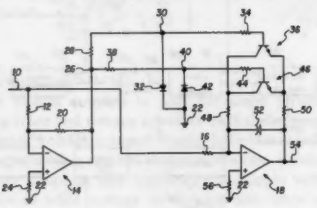
means responsive to said phase comparing means for actuating said motor means.

4,319,173

DUAL POLARITY FAST DISCHARGE INTEGRATOR APPARATUS

Melvin H. Rhodes, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 12, 1980, Ser. No. 158,848
Int. Cl.[3] G05B *11/36*
U.S. Cl. 318—609 **4 Claims**



1. Integration apparatus comprising, in combination:

integrating means including a single amplifier and feedback capacitor, said integrating means providing bipolar output signals in .response to the polarity of input signals supplied thereto;

polarity sensitive switch means, including signal input means, connected to said feedback capacitor means for discharging same under predetermined conditions; and

signal means for supplying bipolar input signals to be integrated to said amplifier means of said integrating means and to said input means of said switch means, said switch means providing a low impedance discharge path to said feedback capacitor means when the polarity of the signal supplied by said signal means and a signal output by said integrating means have predetermined relative polarity values.

4,319,174

STEPPER MOTOR DRIVE SYSTEM

Paul A. Cook, Lexington; Randall D. Mayo, Georgetown, and Jerry W. Raider, Lexington, all of Ky., assignors to International Business Machines Corporation, New York, N.Y.

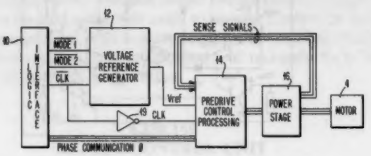
Filed Mar. 31, 1980, Ser. No. 136,002
Int. Cl.[3] G05B *19/40*
U.S. Cl. 318—696 **20 Claims**

1. A method for dynamically controlling the damping of a stepper motor having motor phase windings on salient poles and also having means for controlling the application of currents to predetermined phase windings, said method including:

generating a clock signal;

generating a reference signal in predetermined phase and frequency relationship with said clock signal, said reference signal being at a maximum magnitude at a time proximate to said clock signal and decreasing continuously in magnitude at subsequent times until power to one of said predetermined phase windings is switched between ON and OFF;

sensing the current including current flowing through said one of said predetermined phase windings but not including current flowing through phase winding for a pole next adjacent in operation to a pole of said one phase winding for deriving a sense signal thereof;



comparing for equality in amplitude said reference signal with said sense signal for deriving an equality information thereof;

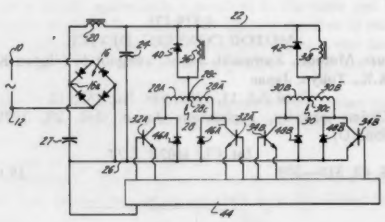
switching the power applied to said one of said predetermined phase windings ON and OFF alternatively, using the information provided by said clock signal for switching one way and said quality information for switching the other way.

4,319,175

STABILIZED STEPPING-MOTOR SYSTEM

Albert C. Leenhouts, Harwinton, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed Jun. 6, 1980, Ser. No. 157,025
Int. Cl.[3] G05B *19/40*
U.S. Cl. 318—696 **14 Claims**

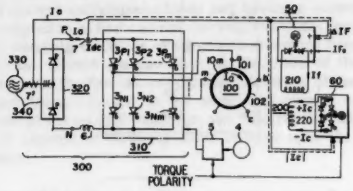


1. The combination of a stepping motor having plural phase windings, energizing means for supplying unidirectional current to said phase windings, switching means for sequentially connecting the phase windings to and disconnecting them from the energizing means for causing stepwise operation of the motor, and current-clamping means for regulating the current of said windings, said current clamping means including means responsive gradually to the energization of said windings for establishing a variable level of current limitation, for thereby developing significant positive damping of parametric motor oscillations.

4,319,176
SYNCHRONOUS MACHINE DRIVE APPARATUS

Masahiko Akamatsu, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 863,907, Dec. 23, 1977. This application Oct. 25, 1978, Ser. No. 954,472
Claims priority, application Japan, Dec. 23, 1976, 51-155914
Int. Cl.[3] H02P 7/06
U.S. Cl. 318—716 7 Claims

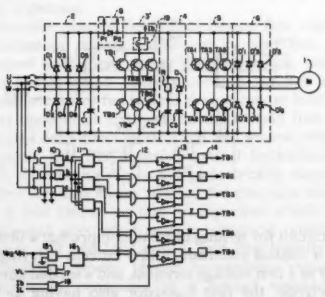


1. A synchronous machine drive system comprising:
(A) A synchronous machine having
a plurality of poly-phase armature windings;
a first exciting winding with a first magnetic axis for producing a fundamental flux of an air gap of said synchronous machine to provide the fundamental flux to said armature windings; and
a second exciting winding with a second magnetic axis;
(B) A static power converter with A.C. power consisting of a plurality of solid-state switches for converting to or from A.C. power between said armature winding and a source;
(C) first exciting means for supplying a first D.C. current to said first exciting winding;
(D) second exciting means for adjustably supplying a second D.C. current to said second exciting winding in reversible polarity of said second D.C. current and in response to a value corresponding to the torque of said synchronous machine; and
(E) additional exciting means for adding to the magnetomotive force generated by said first exciting winding.

4,319,177
OPERATION CONTROL APPARATUS FOR AC MOTORS

Shigeki Kawada, Hino, and Hiroshi Ishida, Hamuramachi, both of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Aug. 8, 1980, Ser. No. 176,337
Int. Cl.[3] H02P 5/40
U.S. Cl. 318—798 9 Claims

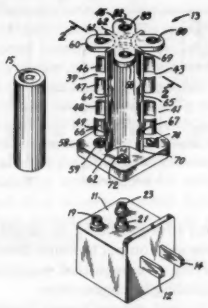


1. An apparatus for controlling the operation of an AC motor, which apparatus comprises:
a rectifier connected to an AC power source for converting alternating current into direct current;
a variable voltage-variable frequency inverter for applying drive signals to the AC motor upon receiving the direct current output of said rectifier, the supply voltage and frequency of said drive signals being varied in accordance with an externally applied command;
a transistor bridge circuit for regenerative action connected between said inverter and said rectifier, and comprising a plurality of transistors connected in the form of a bridge;
a smoothing capacitor connected between said transistor bridge circuit and said inverter;
a diode provided between said rectifier and said transistor bridge circuit and connected to a reverse biasing polarity when the AC motor operates in the regenerative braking region; and
a firing control circuit for detecting the reverse bias voltage of said diode thereby to control the firing of each transistor in said transistor bridge circuit;
braking energy being fed back to the AC power source side.

4,319,178
CHARGING SYSTEM WITH MULTIPLE ATTACHABLE CELLHOLDER MODULES

Raymond K. Sugalski, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed Feb. 4, 1980, Ser. No. 118,119
Int. Cl.[3] H02J 7/00; H01M 10/46, 2/10
U.S. Cl. 320—2 18 Claims



1. In a charging system comprising:
a. a source of charge current comprising (1) a housing, (2) a transformer having a secondary winding disposed in said housing, and (3) first, second and third source terminals, said first and third source terminals connected to said winding, said second source terminal connected to said winding at a point intermediate of the connections of said first and third source terminals to said winding;
b. a first cellholder charging module comprising (1) first, second and third module terminals for selective connection to said first, second and third source terminals, respectively; (2) compartment means for holding a plurality of cells for charging; (3) circuit means connecting at least one cell in series between said first and second module terminals and between said second and third module terminals, respectively; and
c. a second charging module comprising (1) compartment means for holding at least one cell of a physical size different from said compartment means of said first module and (2) having only first and second module terminals for connection, respectively, to said first and third source terminals,
the improvement which comprises charging modules which contain compartments for holding said cells wherein each of said compartments is defined by one or two pair of resilient

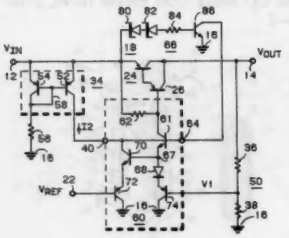
side wall loading tab means, a pair of partition walls which partially separate adjacent compartments, an end wall in the base of said module, and an upper resilient arm radiating from the central axis of the module, which forms the upper end of said compartment, wherein said resilient loading tabs and resilient upper arm restrict the opening of said compartment to a dimension less than that of the cell type to be accommodated in said compartment but which tabs and arm are capable of being deflected in a manner increasing the dimensions of the opening to allow a cell to be introduced and removed from the compartment.

4,319,179

VOLTAGE REGULATOR CIRCUITRY HAVING LOW QUIESCENT CURRENT DRAIN AND HIGH LINE VOLTAGE WITHSTANDING CAPABILITY

William B. Jett, Jr., San Jose, CA, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 25, 1980, Ser. No. 181,304
Int. Cl.³ G05F *1/58*
U.S. Cl. 323—281 **13 Claims**



1. A regulator circuit for providing an output signal having a regulated magnitude at an output terminal thereof in response to an input signal having an unregulated magnitude at an input terminal thereof, including in combination:

output electron control means having input, output and control terminals;

first circuit means electrically coupling said control terminal to a circuit node;

a first reference potential conductor for providing a first reference potential;

a second reference potential conductor for providing a second reference potential;

a first parallel circuit branch including first comparator electron control means having a main electrode coupled to said circuit node, a control electrode coupled to said second reference potential conductor, and another main electrode directly connected to said first reference potential conductor;

a second parallel circuit branch including second comparator electron control means having a main electrode coupled to said circuit node, a control electrode adapted to receive a feedback signal representative of the magnitude of the output signal, and another main electrode of said second comparator electron control device being directly connected to said first reference potential conductor; and

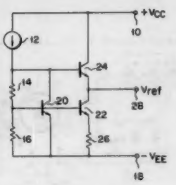
said first and second comparator electron control means being responsive to the relative magnitudes of said feedback signal and said second reference potential to control said output electron control means for providing the regulation of the magnitude of the output signal.

4,319,180

REFERENCE VOLTAGE-GENERATING CIRCUIT

Katsumi Nagano, Hiratsuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 13, 1980, Ser. No. 159,449
Claims priority, application Japan, Jun. 27, 1979, 54/80099
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—313 **2 Claims**



1. A reference voltage-generating circuit which comprises: first and second power supply terminals (**10, 18**);

a constant current source (**12**), one end of which is connected to the first power supply terminal (**10**);

a voltage-dividing means (**14, 16**) connected between said constant current source (**12**) and second power supply terminal (**18**);

a first transistor (**20**) whose base is connected to the voltage-dividing point of said voltage-dividing means (**14, 16**), whose collector is connected to the junction of said constant current source (**12**) and voltage-dividing means (**14, 16**), and whose emitter is connected to said second power supply terminal (**18**);

a second transistor (**22**) whose base is connected to the base of said first transistor (**20**);

a resistor means (**26**) which is connected between said second transistor (**22**) and second power supply terminal (**18**);

a third transistor (**24**) whose base is connected to the collector of said first transistor (**20**), whose collector is connected to said first power supply terminal (**10**), and whose emitter is connected to the collector of said second transistor (**22**); and

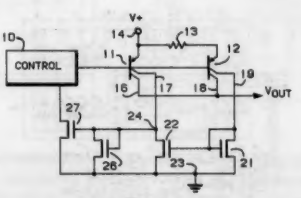
an output terminal (**28**) which is connected to the emitter of said third transistor (**24**).

4,319,181

SOLID STATE CURRENT SENSING CIRCUIT

Robert S. Wrathall, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 24, 1980, Ser. No. 219,795
Int. Cl.³ G05F *1/46;* H03K *5/08*
U.S. Cl. 323—315 **9 Claims**



1. A circuit for sensing current, comprising: a first transistor having a control electrode, a first current carrying electrode coupled to a first voltage terminal, and a second current carrying electrode, the first transistor also having an additional current carrying electrode capable of carrying a predetermined ratio of current carried by the second current carrying electrode; a second transistor having a control electrode coupled to the control electrode of the first transistor and having

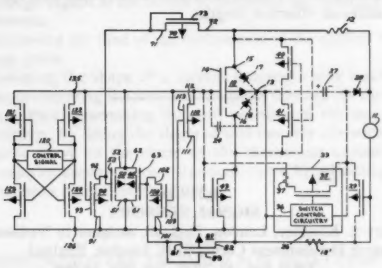
a first current carrying electrode and a second current carrying electrode, the second transistor also having an additional current carrying electrode capable of carrying a predetermined ratio of current carried by the second current carrying electrode of the second transistor; a resistor coupled between the first current carrying electrode of the second transistor and the first voltage terminal; a third transistor having a first and a second current carrying electrode and having a control electrode, the first current carrying electrode of the third transistor being coupled to the additional current carrying electrode of the first transistor; and a fourth transistor having a first and a second current carrying electrode and having a control electrode coupled to its first current carrying electrode, the second current carrying electrode of the fourth transistor being coupled to the second current carrying electrode of the third transistor, and the first current carrying electrode of the fourth transistor being coupled to the additional current carrying electrode of the second transistor, and wherein the third transistor is capable of carrying more current than the fourth transistor.

4,319,182

ALTERNATING POLARITY POWER SUPPLY CONTROL APPARATUS

Marc D. Hartranft, Brooklyn Park, and Thomas E. Hendrickson, Wayzata, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 18, 1980, Ser. No. 141,512
Int. Cl.³ G05F *5/00*
U.S. Cl. 323—319 **23 Claims**



1. An electronic switching circuit for controlling transfer of electrical power from an alternating polarity electrical power supply means to a load means, said switching circuit comprising:

a first transfer control field-effect device provided in and on a first substrate, said first transfer control field-effect device comprising:

a first transfer control field-effect device channel region located at least in part in a first selected region of said first substrate;

first transfer control field-effect device first and second terminating regions, separated by said first transfer control field-effect device channel region, into which and out of which primary currents through said first transfer control field-effect device can, at least in part, pass upon electrical energization of said first transfer control field-effect device first and second terminating regions, said first transfer control field-effect device first terminating region being electrically connected to a first terminal means adapted for electrical connection to a first circuit portion arrangement which includes both said alternating polarity electrical power supply means and said load means, said first transfer control field-effect device second terminating region being electrically connected to a second terminal means adapted for electrical connection to said first circuit portion arrangement; and

a first transfer control field-effect device gate region capable of affecting, upon electrical energization thereof, any current flow occurring through said first transfer control field-effect device channel region as a result of electrical energization of said first transfer control field-effect device first and second terminating regions;

a first threshold switch means having first and second terminating regions and having a control region therein by which said first threshold switch means is capable of being directed to effectively provide a conductive path of a selected conductivity between said first threshold switch means first and second terminating regions if a selected threshold magnitude is crossed during value changes in a signal applied to said first threshold switch control region, said first threshold switch means first terminating region being electrically connected to said first transfer control field-effect device gate region, said first threshold switch means second terminting region being electrically connected to said first substrate, and said first threshold switch means control region being electrically connected to one of said first transfer control field-effect device first and second terminating regions; and

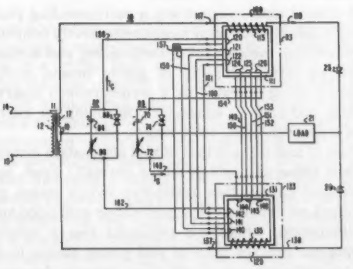
a second threshold switch means having first and second terminating regions and having a control region therein by which said second threshold switch means is capable of being directed to effectively provide a conductive path of a selected conductivity between said second threshold switch means first and second terminating regions if a selected threshold magnitude is crossed during value changes in a signal applied to said second threshold switch control region, said second threshold switch means first terminating region being electrically connected to said first threshold switch means first terminating region, said second threshold switch means second terminating region being electrically connected to said first threshold switch means second terminating region, and said second threshold switch means control region being electrically connected to that one of said first transfer control field-effect device first and second terminating regions opposite that to which said first threshold switch means control region is electrically connected, as aforesaid, whereby one of said first and second threshold switch means can be directed, as aforesaid, by occurrences of voltage differences between said first transfer control field-effect device first and second terminating regions of proper polarity and sufficient magnitude.

4,319,183

CONTROL WINDINGS FOR SELF-SATURATING ELECTRICAL REACTORS

Theodore R. Specht, and Robert D. Morris, both of Sharon, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 12, 1980, Ser. No. 186,367
Int. Cl.³ G05F *7/00*; H02P *13/24*
U.S. Cl. 323—337 **8 Claims**



1. A self-saturating electrical reactor for use in a power transmission and distribution system, comprising:

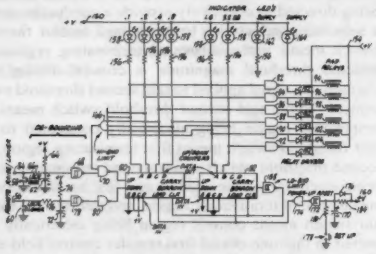
a casing;
a magnetic core located within said casing;
a gate winding having at least one turn on said magnetic core, said gate winding being accessible from outside of said casing for connection to the power system;
a plurality of DC windings having at least one turn on said magnetic core, said DC windings being accessible from outside of said casing enabling their external connection to determine the configuration of said DC windings;
and means bundling said plurality of at least one turn DC windings providing a single bundled conductor having at least one turn on said magnetic core.

4,319,184

REMOTE CONTROL PRECISION STEP ATTENUATOR

Walter Kowalczyk, 1449 Jeffery Dr., North Huntingdon, Pa. 15642

Filed Aug. 25, 1980, Ser. No. 181,118
Int. Cl.³ G05F *3/02*
U.S. Cl. 323—354 **7 Claims**



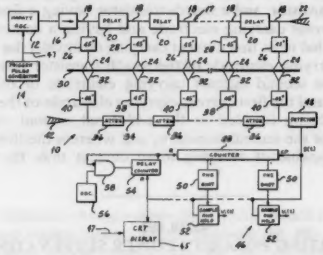
1. A remote control precision step attenuator for providing a desired amount of attenuation in the transmission channel of an audio signal comprising:
counter means for providing a binary output representative of the desired attenuation;
input means coupled to said counter means for causing a stepwise increment or decrement to the output count of the counter means;
control means responsive to the binary output count for producing an attenuation control signal;
attenuation means coupled within the transmission channel and controlled by said attenuation control signal for applying the desired amount of attenuation into the channel, said attenuation means comprising a pad having a plurality of interconnected sections, each section having series resistance means, parallel resistance means, series resistance interconnecting switch means, and parallel resistance shorting switch means;
said control means comprising a corresponding plurality of relay means, each relay means respectively controlling the two switch means in its corresponding pad section, and a corresponding plurality of gating means, each gating means being operated by a predetermined binary output from said counter means for controlling the energization of a corresponding relay means; and
certain of said pad sections of said attenuation means having their respective switch means normally open, and other sections having their respective switch means normally closed, so as to provide a prefixed de-energized amount of attenuation, whereby a particular binary output count operates selected ones of said gating means to energize corresponding ones of said relay means to thereby operate the switch means in the corresponding pad sections so as to control the amount of resistance in the transmission channel to apply the desired attenuation thereto.

4,319,185

DELAY LINE MICROWAVE MOISTURE MEASURING APPARATUS

John H. Hill, Hamilton, Canada, assignor to Sentrol Systems Ltd., Downsview, Canada

Filed Dec. 5, 1979, Ser. No. 100,424
Int. Cl.³ G01R *27/04*
U.S. Cl. 324—58.5 A **18 Claims**



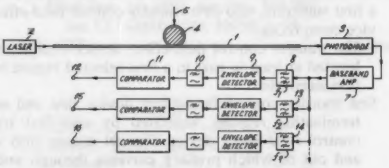
12. Apparatus for analyzing a plurality of regions of a material including in combination means for providing a pulse of electromagnetic energy, a detector, means for providing respective transmission paths having respective parallel portions through said regions between said pulse means and said detector, and means providing the transmission paths with appreciably different effective lengths.

4,319,186

SIGNAL SENSORS

Stuart A. Kingsley, London, England, assignor to National Research Development Corporation, London, England

Filed Apr. 30, 1979, Ser. No. 34,666
Claims priority, application United Kingdom, May 5, 1978, 18004/78
Int. Cl.³ G01R *31/00*; H01S *3/00*; H04B *9/00*
U.S. Cl. 324—96 **6 Claims**

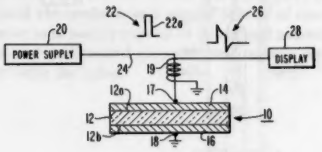


1. A signal sensor comprising a source of coherent electromagnetic radiation of optical frequency, a detector of such radiation, a length of optical fibre extending between the source and the detector, a transducer positioned part-way along said length of fibre to phase modulate said radiation in accordance with input signals supplied to the transducer, reflector means spaced apart on opposite sides of the transducer to produce optical echo signals which combine with the initially modulated signal to produce a resultant differentially phase-modulated signal for homodyne detection in the detector, and means for indicating the value of the peak frequency of the detected signals, said peak frequency being related to the amplitude of the said input signals.

4,319,187
METHOD FOR MEASURING THE DRIFT MOBILITY IN DOPED SEMICONDUCTORS

Richard S. Crandall, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,253
Int. Cl.³ G01R *31/26*
U.S. Cl. 324—158 D **5 Claims**



1. A method of measuring the majority carrier drift mobilities in electrical semiconducting materials in which the dielectric relaxation time of the material can be longer or shorter than the drift transit time of the majority carrier, comprising the steps of:

reverse biasing with a DC voltage a device formed of the electrical semiconducting material and having one Schottky-barrier contact and one ohmic contact;

applying a forward bias voltage pulse of sufficient magnitude and duration to inject majority charges into the space charge region of the device to neutralize the space charge therein;

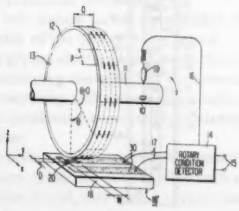
determining the time of the termination of the applied voltage pulse;

monitoring the shape of a current transient curve resulting from removing the forward bias pulse through the device, and then determining the drift mobility of the majority carriers, by fitting the shape of said monitor current transient curve to the shape of the theoretical normalized majority carrier current transient curve by adjusting the majority carrier drift mobility.

4,319,188
MAGNETIC ROTARY ENCODER FOR DETECTION OF INCREMENTAL ANGULAR DISPLACEMENT

Susumu Ito; Morimasa Nagao; Kaoru Toki, and Keizo Morita, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 16,701, Feb. 28, 1979, abandoned. This application Dec. 24, 1980, Ser. No. 219,759
Claims priority, application Japan, Feb. 28, 1978, 53-23118
Int. Cl.³ G01P *3/48*
U.S. Cl. 324—173 **54 Claims**



1. A magnetic rotary encoder comprising:

a rotary means attachable to a rotatable shaft;

a magnetic medium endlessly provided on a surface of said rotary means and divided at a pitch p into a plurality of magnetic sections each of which has a magnetic signal recorded thereon said magnetic medium having a thickness less than p and producing an alternating magnetic field as said rotary means revolves;

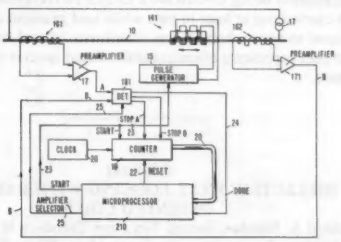
a magnetic field detector including a magneto-resistor having a stripe-like configuration with width D and longitudinal dimension W and arranged in a plane substantially parallel to the nearest surface of said magnetic medium in the vicinity of said rotary means such as to be spaced relative to said magnetic medium by a spacing equal to or less than 20p at its furthest portion, said width D being so selected as not to be in excess of 20p at its furthest portion, said width D being so selected as not to be in excess of 20p but to be equal to or less than p.secϕ, where ϕ is an angle defined by the nearest surfaces of said magneto-resistor and said magnetic medium, said magneto-resistor responsive to said alternating magnetic field and generating an analog signal representative of its electrical resistance change corresponding to the increment of the rotation angle of said rotary means, the boundary dividing each of said magnetic sections being within approximately 45° from parallel with respect to the direction of said longitudinal dimension of said magneto-resistor, said magnetic field detector further including high permeable magnetic means provided adjacent and substantially parallel to said magneto-resistor; and

a rotary condition detector electrically connected to said magnetic field detector for receiving said analog signal and producing output signals indicative of the rotating conditions of said rotary means.

4,319,189
MAGNETOACOUSTIC POSITION SENSOR EMPLOYING PULSE CODE SEQUENCE GENERATORS AND DETECTORS

Clifton D. Cullum, Jr., Putnam Valley; David A. Thompson, South Salem, and Thomas K. Worthington, Tarrytown, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,659
Int. Cl.³ G01B *7/14*
U.S. Cl. 324—208 **10 Claims**



1. In an acoustic pulse delay line system for measuring the distance along a magnetostrictive wire from a first point on said wire to a second point on said wire including means for measuring the time required for a pulse to move between said points with a magnetoacoustic pulse generator at said first point and a magnetoacoustic pulse sensor at said second point, the improvement comprising said pulse generator including means for periodically generating a specific sequence of code pulses and including a plurality of coils connected in series with varying degrees of chirality and connected to a source of a timing pulse, and said sensor including a code detector including a plurality of coils with matching chirality connected to match said coils in said pulse generator for detecting said specific sequence of code pulses from said generator, said sequence of code pulses when detected thereby providing a high degree of discrimination between said sequence of code pulses and noise signals.

4,319,190

NUCLEAR MAGNETIC RESONANCE IMAGING IN SPACE AND FREQUENCY COORDINATES

Truman R. Brown, Bedminster, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 6, 1980, Ser. No. 127,726
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—309 **10 Claims**

1. Method for producing an image of at least a first species and a second species of nuclear spin in at least a portion of a specimen, said image comprising information of concentration of said species at points in said specimen, said method comprising

subjecting said portion to an essentially constant first magnetic field (H_o) whose direction is here designated as the z-direction,

repeatedly carrying out the steps of (1) subjecting said portion to a first electromagnetic signal which is a radiofrequency pulse, (2) subjecting said portion to a second magnetic field (H_1) which is essentially in said z-direction, whose strength is essentially linearly increasing in a spatial direction which is substantially different from said z-direction, and whose gradient is specifically chosen for each repetition, and (3) sampling a second electromagnetic signal which originates from said portion, and

applying a discrete Fourier transform to values obtained in the course of sampling,

said method being CHARACTERIZED IN THAT sampling is carried out at least in part while said gradient is essentially equal to zero whereby one coordinate of said image at least in part represents chemical shift of said species in said specimen.

4,319,191

DIELECTRIC WELL LOGGING WITH RADIALLY ORIENTED COILS

Richard A. Meador, Spring, Tex., and Theodore W. Nussbaum, Harahan, La., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 10, 1980, Ser. No. 110,967
Int. Cl.³ G01V *3/30*; H01F *15/04*
U.S. Cl. 324—341 **3 Claims**

3. In a dielectric well logging system having a sonde for movement along a longitudinal axis in a well borehole for emissions of radio frequency energy from a source coil and detection of such energy by receiver coils, each of said coils being mounted in said sonde with its longitudinal axis extending radially with respect to the longitudinal axis of said sonde, means for shielding said coils, comprising:

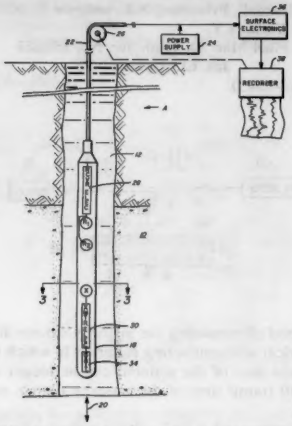
(1) a hollow tubular member of conductive material;

(2) an end plate of conductive material for closing each end of said tubular member to enclose one of said coils therein;

(3) a slot formed in one of said end plates in alignment with the longitudinal axis of mounting of said coils enclosed in said tubular member;

(4) a plurality of slots formed in said tubular member in alignment with said longitudinal axis of said sonde;

(5) connector members separating an upper portion and a lower portion of said tubular member; and



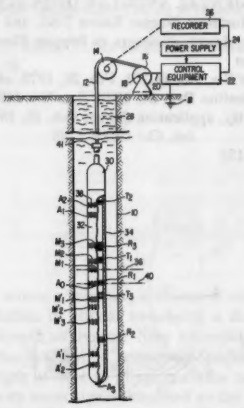
(6) a circumferential slot formed extending between said connector members about the periphery of said tubular member at said mid portion thereof.

4,319,192

DEEP AND/OR SHALLOW ELECTRICAL RESISTIVITY INVESTIGATION SUITABLE FOR DUAL RESISTIVITY-INDUCTION LOGGING

Roland Chemali, and Jacques Tabanou, both of Chevreuse, France, assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Jan. 18, 1979, Ser. No. 4,621
Claims priority, application United Kingdom, Jan. 21, 1978, 2500/78; May 31, 1978, 25094/78
Int. Cl.³ G01V *3/24*
U.S. Cl. 324—375 **33 Claims**



6. An apparatus for the electrical investigations of earth formations traversed by a borehole, comprising:

an elongated support member,

a plurality of electrodes supported in spaced apart relationship along the length of said support member, including a central electrode, and two pairs of electrodes, the two

electrodes of each pair being positioned about said central electrode,

a first source of electrical current,

first electrical impedance means connecting said two electrode pairs to said first source of electrical current so as to supply current to one of said electrode pairs and receive returned current from the other of said electrode pairs,

a second source of electrical current, and

second electrical impedance means connecting said central electrode and the one of said electrode pairs nearest said central electrode to said second source of electrical current so as to supply current to one of said nearest electrode pair and said central electrode and receive returned current from the other.

4,319,193

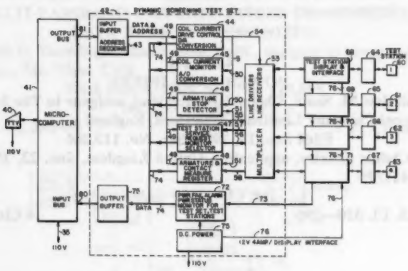
TESTING OF RELAYS AND SIMILAR DEVICES

Filbert J. Boccali, St. Mathias; Eric J. Crompton, and Ivo Machan, both of Montreal, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 14, 1980, Ser. No. 149,838

Int. Cl.³ G01R *31/02*

U.S. Cl. 324—418 **25 Claims**



1. Apparatus for testing relays and similar devices having a core, a coil on said core, an armature actuated by said core and coil, and a plurality of contacts actuated by movement of said armature, said apparatus comprising:

at least one test station including a socket for reception of terminal pins of the device to be tested;

means for applying electrical power to the coil of the relay;

means for measuring the travel of the armature;

means for comparing said travel with a datum value for said travel and producing a percentage relationship with said datum value;

means for applying said percentage relationship to predetermined datum values for actuation of each said contacts by said armature travel, said datum values relates to armature travel, to produce new datum values;

means for detecting actuation of each said contacts during armature travel and related thereto and comparing armature travel for each contact with said new datum values;

means for producing a signal indicative of the relationship between armature travel for each contact and said new datum values.

4,319,194

METHOD OF AND APPARATUS FOR MONITORING PLATELET AGGREGATION AND TEST CELL FOR USE IN SUCH METHOD AND APPARATUS

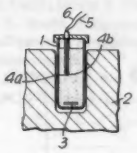
David C. Cardinal, Tonbridge, and Roderick J. Flower, Biggin Hill, both of England, assignors to Burroughs Wellcome Co., Triangle Park, N.C. and Wellcome Foundation Ltd., London, England

Filed Oct. 1, 1979, Ser. No. 80,525

Claims priority, application United Kingdom, Oct. 2, 1978, 39006/78

Int. Cl.³ G01N *27/02*

U.S. Cl. 324—449 **10 Claims**



1. A method of monitoring blood-platelet aggregation in a platelet-containing sample comprising the step of monitoring the change in electrical resistance between rod shaped electrodes immersed in and in contact with the sample while relative movement of the sample and electrodes occurs, the electrodes being not more than approximately 0.25 mm. in diameter.

4,319,195

DEMODULATOR FOR AMPLITUDE MODULATED SIGNAL HAVING HIGH INPUT IMPEDANCE

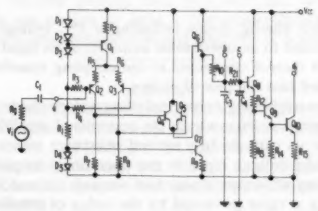
Eiichi Matsumura, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1979, Ser. No. 83,709

Claims priority, application Japan, Oct. 11, 1978, 53-125576

Int. Cl.³ H03D *1/18*

U.S. Cl. 329—101 **10 Claims**



1. A demodulator comprising:

an input terminal adapted to receive an amplitude modulated signal of a carrier signal;

means for deriving two intermediate output signals in response to said amplitude modulated signal, said two intermediate output signals having different phases from each other;

a first and a second transistor having their respective emitters connected in common, a base of said first transistor receiving one of said intermediate output signals, and a base of said second transistor receiving the other of said intermediate output signals;

an emitter follower transistor having a base exclusively connected to the emitters of said first and said second transistors the total capacitance of the parasitic capacitors associated with the emitters of said first and second transistors and the base of said emitter follower transistor

being of a value sufficient for smoothing said carrier signal; and

an output terminal coupled to an emitter of said emitter follower transistor.

4,319,196

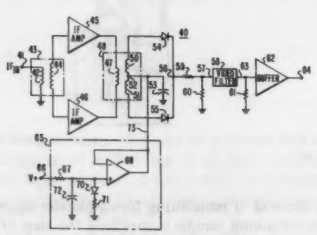
TEMPERATURE COMPENSATED WIDE DYNAMIC RANGE LINEAR ENVELOPE DETECTOR

Shue-Yu Kwan, Odenton, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 17, 1980, Ser. No. 130,875

Int. Cl.³ H03D *1/10*

U.S. Cl. 329—204 **6 Claims**



1. An amplitude modulation detection apparatus, comprising:

first means to receive amplitude modulated carrier frequency signals,

an envelope detection means including a first and second diode rectifier commonly connected at their cathodes to provide a replica of the amplitude modulation of the carrier frequency signal,

a transformer coupling the first means to the detection means,

a low-pass video filter to suppress unwanted frequency components,

second means connecting the commonly connected cathodes to the video filter at its input including a first resistance means (**59, 60, 61**) to minimize impedance mismatch between the detection means and the video filter,

and

a forward biasing means including a DC voltage source connected to an operational amplifier at its input with its output thereof connected to the coupling transformer to forward bias the pair of diodes,

said forward biasing means including a third diode rectifier connected at its anode to the operational amplifier input and at its cathode to a second resistance means (**71**) to vary the voltage input to the operational amplifier as a function of temperature, said second resistance means having a value governed by the value of the first resistance means to subject the first, second, and third diode rectifiers to the same operating conditions.

4,319,197

ECG AMPLIFIER OVERLOAD CONTROL

James R. Trummer, Tullahoma, Tenn., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Jan. 16, 1980, Ser. No. 112,489

Int. Cl.³ H03F *21/00*

U.S. Cl. 330—11 **9 Claims**

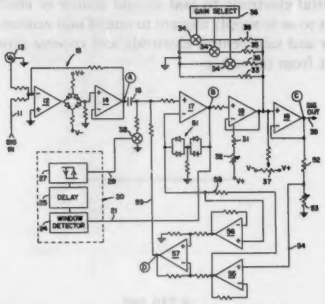
1. An overload control circuit for an AC coupled amplifier system comprising:

(a) voltage-controlled current source means arranged to provide a maximum current output at a voltage input corresponding to a desired full scale signal limit in said amplifier system;

(b) operational amplifier means for providing said current source input in response to signals input to said amplifier system;

(c) gain control feedback circuit means for said operational amplifier comprising switching means exhibiting a predetermined conductance threshold;

(d) instrumentation amplifier means in circuit with the gain control feedback input of said operational amplifier means and with the output of said amplifier system; said instrumentation amplifier determining the differential between



signals appearing at said feedback input and at said system output, and providing a compensation signal corresponding to said differential; and

(e) means for applying said compensation signal to the coupling capacitor of said amplifier system, whereby overloading signals input to said system are offset at said capacitor to the extent of signal levels in excess of said full scale limit, thereby preventing excessive charge accumulation on said coupling capacitor.

4,319,198

POWER AMPLIFIERS

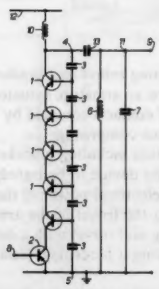
Boleslaw M. Sosin, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Jan. 18, 1980, Ser. No. 113,266

Claims priority, application United Kingdom, Jan. 23, 1979, 02411/79

Int. Cl.³ H03F *3/191*

U.S. Cl. 330—296 **4 Claims**

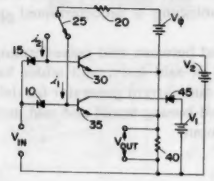


1. A high frequency power amplifier including a plurality of transistors coupled together with their collector-emitter paths connected in series; a chain of reactive components connected in series to form an a.c. potential divider with the base connections of the individual transistors connected to respective points on the potential divider, the reactive components forming part of a resonant tuned circuit connected in the output path of said amplifier; and means for applying high frequency input signals to said transistors.

4,319,199
EFFICIENT POWER AMPLIFIER WITH STAGGERED POWER SUPPLY VOLTAGES

Richard A. Sunderland, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 20, 1979, Ser. No. 106,075
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—297 **9 Claims**

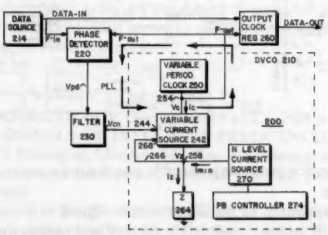


1. An amplifier circuit comprising:
an input stage for producing a current proportional to an applied input signal;
a plurality of parallel output stages coupled to said input stage for supplying output current to a load, each one of said output stages being connected to different power supply voltage levels; and
control means coupled to said plurality of output stages for shifting the output current supplied to said load from one output stage to another based on the instantaneous relationship between said supply voltage levels and an output voltage developed across said load.

4,319,200
MULTI-PASSBAND DIFFERENTIALLY CONTROLLED DATA RATE SYNCHRONIZER

Curtis G. Terwilliger, Burlingame, Calif., assignor to Cromemco Inc., Mt. View, Calif.

Filed Feb. 4, 1980, Ser. No. 118,555
Int. Cl.³ H03L *7/08*
U.S. Cl. 331—8 **21 Claims**

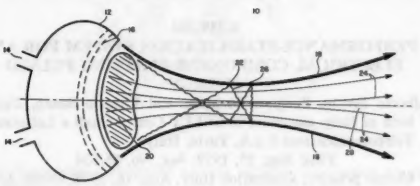


1. A data flow rate synchronizer which receives data-in at a varying flow rate F:in within a selected one of N flow rate passbands for providing a variable period clock signal F:out which maintains synchronization with F:in, comprising:
phase detector means for comparing F:out with F:in, and providing an error signal in response thereto;
variable current means for providing a current Ic which varies in response to the error signal;
a variable period clock generator responsive to Ic for providing a clock signal F:out having a period which varies in a compensatory direction with respect to the variations in F:in for maintaining synchronization therewith within the selected passband;
N level current source means for providing a current Im at one of the N current levels;
passband controller for establishing the selected passband by controlling the current level Im provided by the N level current source;
summing means for combining Ic with Im;
feedback means responsive to the summing means for causing the sum of Ic and Im to track the error signal for accommodating variations in the data flow rate F:in, and for causing a level change in Ic proportional and opposite to each level change in Im for changing the clock period to establish the passband corresponding to the change in Im.

4,319,201
SELF COMPRESSING SUPERSONIC FLOW DEVICE

John E. Bush, Ridgecrest, Calif.; David B. Fenneman, Fredricksburg, Va., and Ronald E. Smith, Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 1, 1979, Ser. No. 90,834
Int. Cl.³ H01S *3/02*
U.S. Cl. 372—58 **21 Claims**



1. A self-compressing supersonic flow device where self-compression is due to convergence and divergence of flow without the need for external walls to constrain a flow pattern comprising:
a working fluid;
a means for driving said fluid at a predetermined rate; and
a plurality of supersonic nozzles placed in a path of said driven fluid for converging said driven fluid, where said convergence arises due to the nozzles which consist of a plurality of curved blades having a subsonic entrance section and a supersonic exit section placed in said driver fluid thereby altering fluid flow such that no external walls are needed to have a convergent-divergent flow pattern downstream from said plurality of nozzles.

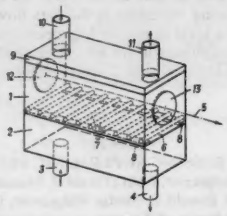
4,319,202
TRANSVERSELY ELECTRICALLY EXCITED ATMOSPHERIC PRESSURE GAS LASER WORKING IN PULSES (TEA LASER)

Dieter Schuöcker, Vienna, and Werner Reif, Klosterneuburg, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Oct. 30, 1979, Ser. No. 89,441
Claims priority, application Austria, Nov. 3, 1978, 7881/78; Oct. 12, 1979, 6664/79
Int. Cl.³ H01S *3/093*
U.S. Cl. 372—83 **5 Claims**

1. In a transversely electrically excited atmospheric pressure gas laser (TEA laser) working in a pulsed mode to produce an output along an optical axis and having a cathode drop region, said laser including a cooled working gas conducted in circulation, a cooled cathode, an anode arranged at a distance from said cooled cathode, and an open-worked auxiliary electrode arranged between said cathode and said anode, the improvement which is characterized in that said cathode is designed as a metallic conducting, elongated cathode plate arranged in a plane and having a longitudinal extent in the optical axis direction, and said auxiliary electrode, which is also metallic and conducting, is arranged parallel to said cathode at a distance therefrom which is in the cathode drop region, so as to pro-

duce a glow skin covering all of said cathode, said open-worked auxiliary electrode being formed by a plurality of members extending transverse to the longitudinal extent of said



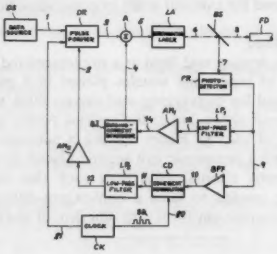
cathode and being spaced closely adjacent each other, said members being in a plane parallel to and having the same profile as the plane of the cathode plate.

4,319,203

PERFORMANCE-STABILIZATION SYSTEM FOR AN ELECTRICAL COMPONENT EMITTING PULSED ENERGY

Alberto Brosio, Borgaro Torinese, and Vittorio Seano, Turin, both of Italy, assignors to CSELT Centro Studi e Laboratori Telecomunicazioni S.p.A, Turin, Italy

Filed Aug. 15, 1979, Ser. No. 66,534
Claims priority, application Italy, Aug. 16, 1978, 68910 A/78
Int. Cl.³ H01S 3/13
U.S. Cl. 372—30 **5 Claims**



1. A system for sending out stabilized binary message signals, comprising:

a semiconductor laser emitting a beam of radiant energy to an optical fiber upon being excited by a current exceeding a predetermined threshold;

pulse-forming means connected to said laser for modulating the emitted energy by a series of randomly alternating low-level and high-level message pulses of predetermined recurrence frequency representing data to be transmitted;

extraction means connected to an output of said laser for recovering a fraction of the energy of each emitted message pulse;

a band-pass filter connected to said extraction means and provided with a pass band centered on said recurrence frequency;

peak-detection means connected to said band-pass filter for generating a feedback signal proportional to the magnitude of the recovered energy fraction of at least some of said high-level message pulses, said peak-detection means comprising a coherent demodulator driven by a train of clock pulses of a cadence equal to said recurrent frequency;

a connection extending from said peak-detection means to a control input of said pulse-forming means for stabilizing the amplitude of said high-level message pulses in response to said feedback signal;

integrating circuitry connected to said extraction means in parallel with said band-pass filter for averaging the recovered energy fraction;

a current generator in cascade with said integrating circuitry deriving from the averaged energy fraction a biasing signal in the form of a reference current slightly exceeding said threshold, said reference current being fed to said laser for establishing a predetermined operating point therefor; and

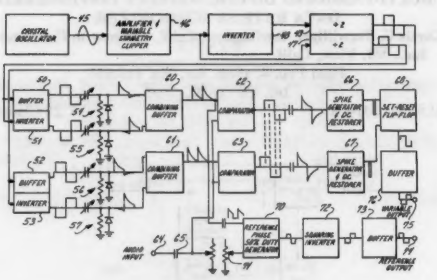
an adder inserted between said pulse-forming means and a driving input of said laser, said adder having an input connected to said current generator for delivering a combination of said biasing signal and said message pulses to said driving input.

4,319,204

PHASE MODULATED SQUARE WAVE GENERATOR

James O. Weldon, and Joseph B. Sainton, both of Dallas, Tex., assignors to Continental Electronics Mfg. Co., Dallas, Tex.

Division of Ser. No. 960,677, Nov. 14, 1978, abandoned. This application Jun. 16, 1980, Ser. No. 159,897
Int. Cl.³ H03K 7/04
U.S. Cl. 332—9 R **15 Claims**



1. System for producing variable phase square wave signals comprising;

means producing an oscillator output signal;

phase shift means connected to receive said output signal for producing an output signal shifted in phase by a preselected amount relative to said oscillator output signal;

first and second ramp signal producing means connected to receive said oscillator output signal and the phase shifted signal, respectively, said first and said second ramp signal producing means each producing a ramp waveform signal on every half cycle of the respective input signal;

first and second comparator means, each having one input connected, respectively, to the outputs of said first and second ramp signal producing means;

means for feeding a variable level signal to the threshold inputs of said first and said second comparators; and

a bistable circuit means having set and reset inputs connected to the outputs from said first and second comparator means, whereby the phase of the output signal of said bistable circuit means is a function of the variable level signal.

4,319,205

CONTROL VOLTAGE GENERATOR FOR A SYSTEM FOR DYNAMIC COMPRESSION OR EXPANSION

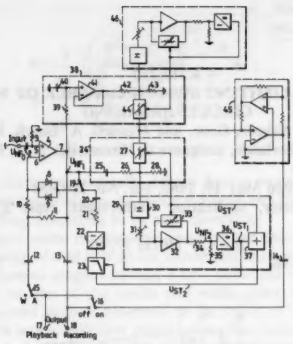
Werner Scholz, Gehrden, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 15, 1980, Ser. No. 121,722

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1979, 2906192

Int. Cl.[3] H04B *1/64*

U.S. Cl. 333—14 13 Claims



1. In a control voltage generator for use in a dynamic compression/expansion system presenting an intelligence signal path, which control voltage generator includes a first controllable amplifier, a first rectifying circuit connected in series with the amplifier, with the input of the rectifying circuit being connected to the output of the amplifier, and means for connecting the input of the amplifier to the intelligence signal path of the system, the improvement comprising a further rectifying circuit having an input connected to the intelligence signal path at a point ahead of the input of said first controllable amplifier, and means connected for combining the signals at the outputs of said first and further rectifying circuits to produce a control signal applied to control the gain of said controllable amplifier, whereby the output signal provided by said further rectifying circuit serves to shorten the response time of said control voltage generator.

4,319,206

TRANSDUCER FOR ORTHOGONALLY POLARIZED SIGNALS OF DIFFERENT FREQUENCIES

Eberhard Schuegraf, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

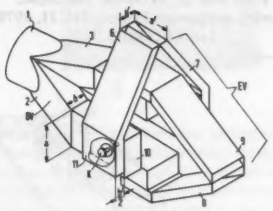
Continuation of Ser. No. 872,602, Jan. 26, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,676

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1977, 2703878

Int. Cl.[3] H01P *1/161, 5/19*

U.S. Cl. 333—126 15 Claims

1. A transducer for orthogonally polarized signals including a symmetrically designed branching arrangement having a longitudinal axis, having a longitudinally extending common waveguide providing a common passageway, and having two pairs of dual branching waveguide sections branching from said common waveguide and providing a dual branching from the common passageway, each dual branching waveguide section having one end connecting with said common waveguide and having an opposite end remote from the one end thereof, first and second pairs of switch arm waveguide sections each having one end thereof coupled with the opposite end of one of the dual branching waveguide sections associated therewith, and having an opposite end remote from the one end thereof, and first and second pairs of simple branching waveguide sections each having one end coupled with the opposite end of one of said switch arm waveguide sections associated therewith and having an opposite end remote from the one end thereof, said opposite ends of each pair of simple branching waveguide sections converging to a respective branch passageway, each associated dual branching waveguide section, switch arm waveguide section and simple branching section providing a wave energy path between said common passageway and an associated one of the branch passageways, and the pairs of simple branching waveguide sections being symmetrical with each other, wherein an improvement comprises said switch arm waveguide sections being symmetrical and having respective coupling means which are identical to each other for coupling the wave energy via each switch arm waveguide section between the associated



dual branching waveguide section and the associated simple branching waveguide section to provide a completely symmetrical structure and phase synchronization for each of the wave energy paths between said common passageway of the branching arrangement and the respective branch passageways, the dual branching waveguide sections are of rectangular cross-section with a side relation b:a of at least approximately 1:2 to 1:3, the simple branching waveguide sections are of rectangular cross-section, and each of the switch arm waveguide sections is formed by a pair of parallel juxtaposed waveguide sections arranged immediately juxtaposed, said coupling means coupling said juxtaposed waveguide sections and being of such rotation-symmetrical design that the electrical length of the passageways of the arrangement remains intact for different angular relationships between the respective pairs of juxtaposed waveguide sections.

4,319,207

NARROW-BAND-PASS SWITCHING FOLLOWER FILTER HAVING N SWITCHED PATHS

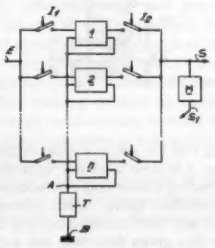
Michel Gignoux, Fontaine, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 30, 1980, Ser. No. 116,972

Claims priority, application France, Feb. 2, 1979, 79 02752

Int. Cl.[3] H03H *19/00;* H03K *5/159, 5/135*

U.S. Cl. 333—173 8 Claims



1. An n-paths tracking filter for following a variable frequency input signal, comprising synchronization means for

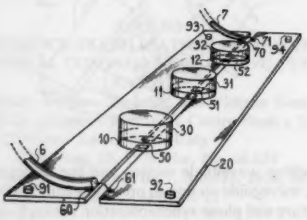
controlling the path switching, said synchronization means being connected to the output of the filter so as to be supplied by the filtered signal and to control the switching of each path, and means for providing a transfer function of the filter so that, before capture of the variable frequency input signal by the filter, a part of the variable frequency input signal will be present in the output signal of the filter, these means acting on each path of the filter, so that the filter provides the capture and track of the input signal when the frequency of this signal is varied.

4,319,208

MICROWAVE FILTER INCORPORATING DIELECTRIC RESONATORS

Pierre de Bayser; Pierre Fraise, and Yves Le Nohaic, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 18, 1979, Ser. No. 58,605
Claims priority, application France, Jul. 21, 1978, 78 21711
Int. Cl.³ H01Q *2/03*
U.S. Cl. 333—204 **4 Claims**



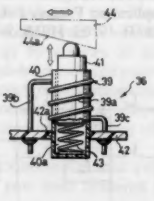
2. A microwave filter of the bandstop type comprising a metal plate, a slotted waveguide and n dielectric resonators (n being a positive integer) which are electromagnetically coupled to the slotted waveguide, wherein said waveguide is constituted by a slot which is cut in said metal plate, wherein said filter comprises n short-circuits for dividing the slot into n+1 sections and wherein n resonators are respectively placed in the vicinity of the n short-circuits.

4,319,209

FINE TUNING COIL HAVING STEEL WIRE FORMING COIL PORTION

Toshiwo Hara, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1980, Ser. No. 156,591
Claims priority, application Japan, Jun. 6, 1979, 54-76769
Int. Cl.³ H03J *3/04*
U.S. Cl. 334—74 **4 Claims**



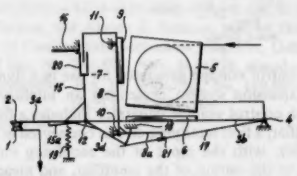
1. A fine tuning coil for use in a local oscillator circuit of a tuner, comprising: a hollow core accommodation member; a core member extending within said core accommodation member to move therewithin; spring means accommodated in the hollow portion of said core accommodation member to urge said core member in a given direction; and a coil consisting of a wound portion having a plurality of turns and wound about the outer periphery of said core accommodation member, said coil being made of a steel wire wound about said core accommodation member with sufficient space between adjacent turns to reduce the moisture absorbable by the coil and having a reduced thickness to increase the number of turns attained per unit length of the coil.

4,319,210

CURRENT LIMITING SWITCH CAPABLE OF RAPID CIRCUIT BREAKING

Derk van der Scheer, Goor, and Hendrik A. Bosch, Hengelo, both of Netherlands, assignors to Hazemeijer B.V., Hengelo, Netherlands

Filed May 19, 1980, Ser. No. 150,930
Claims priority, application Netherlands, Apr. 21, 1979, 7903987
Int. Cl.³ H01H *77/10*
U.S. Cl. 335—16 **7 Claims**



1. A rapid circuit breaking current limiting switch, comprising:

a contact arm operable to rotate about a fixed point;

at least one pair of mutually cooperating contacts, one contact of said pair being mounted fixedly and the other contact of said pair being movably mounted on said contact arm;

electromagnetic means energized by the current passing through the switch and enabling disengagement of said fixed contact from said movable contact with said current exceeding a predetermined threshold, and including a first and second armature, said first armature adapted to move said movable contact in the direction of said disengagement;

a locking device for blocking said movable contact in the direction of movement thereof until said threshold current is reached and being released by said second armature, said locking device including a locking arm operable to rotate about a second fixed point;

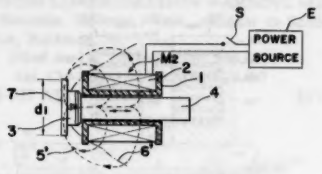
said contact arm including a cam confronting the free end of said locking arm in a rest position thereof, a first and second part hingably connected with one another, said first part carrying said movable contact and said second part being adapted to coact with said first armature and said locking arm to rotate about said first fixed point, said first part being coupled to said locking arm such that, upon rotation of said first part, the locking of said second part by said locking arm is released to rotate about said hinge point; and

said contact arm further including a third part rigidly coupled to said first part, the free end of said third part being coupled to said locking arm such that such locking arm is moved from the confronting relationship thereof with said cam switch with rotation of said first part.

4,319,211
ELECTROMAGNETICALLY DRIVEN DEVICE

Hiroshi Ueda, Nara, and Shigeru Oyokota, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Azuchi, Japan

Filed Nov. 6, 1979, Ser. No. 91,811
Claims priority, application Japan, Nov. 10, 1978, 53-139153
Int. Cl.[3] H01F 7/08
U.S. Cl. 335—229 13 Claims



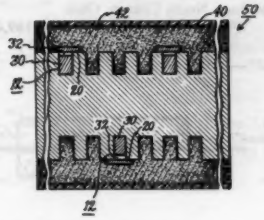
1. An electromagnetically driven device comprising:
a bobbin made of non-magnetic material and formed with an opening extending in its axial direction;
a plunger made of magnetic material and inserted into said opening of said bobbin for movement in its axial direction;
a permanent magnet having a first polarized surface polarized to one of the north and south poles and a second polarized surface polarized to the other of the north and south poles; said first polarized surface being attached to one end of said plunger and being in alignment with said second polarized surface in the axial direction of said plunger;
a segment made of magnetic material and having at least a first surface which is attached to said second polarized surface of said permanent magnet and a second surface which is polarized to the same polarity as said second polarized surface of said permanent magnet and which is always located outside said opening of said bobbin;
a coil wound around said bobbin so as to intersect the magnetic field of said permanent magnet produced at a space between the peripheral surface of the plunger and said second surface of said segment, said second surface of said segment being located closer to the side surface of the wound coil than said second polarized surface of said permanent magnet such that the space between said second surface of said segment and the peripheral surface of said plunger has a magnetic reluctance which is less than the magnetic reluctance of a space between said second polarized surface of said permanent magnet and the peripheral surface of said plunger if said segment were not attached to said second polarized surface of said permanent magnet by said first surface; and,
a current supply circuit for supplying an electric current to said coil.

4,319,212
FUSE SUPPORTING MEANS HAVING NOTCHES CONTAINING A GAS EVOLVING MATERIAL

John G. Leach, Hickory, N.C., assignor to General Electric Company, Philadelphia, Pa.

Filed Apr. 6, 1981, Ser. No. 251,641
Int. Cl.[3] H01H 85/04
U.S. Cl. 337—159 4 Claims

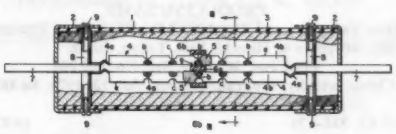
1. In a high voltage fuse of the current limiting type having a tubular insulating casing and an inert granular material of high dielectric strength within the casing, said current limiting fuse further comprising:
a core within the tubular casing extending longitudinally thereof;
one or more ribbon-type fuse elements of predetermined width wrapped around the core and having turns spaced apart along the length of said core,
said core having a plurality of angularly-spaced fin members disposed about its center and extending longitudinally of the core, said plurality of fin members having a plurality of cutouts located on their outer surface so as to increase the outer surface area of said core, said cutouts having a predetermined width with immediately-adjacent cutouts being spaced apart from each other by a predetermined amount, said predetermined width of said cutout being less than the predetermined width of said fuse element, said predetermined width of said cutout and said predetermined amount of spacing between immediately-adjacent cutouts having a combined longitudinal distance along the outer surface of the associated fin member which is less than the distance along the fin member between adjacent turns of the fuse element or elements so that at least one of said cutouts is interposed between adjacent turns of said wrapped fuse element or elements, whereby said interposition of said cutout between said adjacent turns of said fuse element or elements improves the creepage between adjacent turns of said fuse element or elements.



4,319,213
ELECTRIC FUSE FOR COMPENSATING HEATING IN THE CENTER OF THE FUSIBLE ELEMENT

Clyde D. Reid, Rte. 1-Box 221, Amesbury, Mass. 01913

Filed Dec. 8, 1980, Ser. No. 214,080
Int. Cl.[3] H01H 85/04, 85/12
U.S. Cl. 337—161 5 Claims



1. An electric fuse comprising a tubular casing of electric insulating material, terminal elements closing said casing at the ends thereof, a granular arc-quenching filler inside said casing, a pair of fusible elements having edges extending in a direction longitudinally thereof embedded in said arc-quenching filler and conductively interconnecting said pair of terminal elements, each of said pair of fusible elements having juxtaposed points of reduced cross-section, and each of said pair of fusible elements further supporting an M-effect - causing overlay on one of said juxtaposed points of reduced cross-section wherein
(a) said M-effect causing overlay on each of a juxtaposed point of reduced cross-section extends in opposite directions away from said points in a direction longitudinally of said pair of fusible elements;
(b) a substantially E-shaped member of solid gas-evolving material has three parallel spaced arms, said arms define a plane substantially at right angles to said pair of fusible elements;
(c) one of said pair of arms is interposed between said pair of fusible elements at the region thereof where two of said juxtaposed points of reduced cross-section are located;

(d) one of each of the two other arms of said substantially E-shaped member is arranged in close proximity to said pair of fusible elements at right angles to said edges thereof; and

(e) a tie arm is arranged at right angles to said three arms integrating said three arms into a unitary structure.

4,319,214

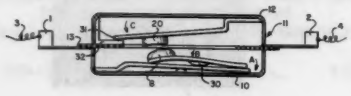
CREEPLESS, SNAP ACTION THERMOSTAT

Omar Givler, North Canton, Ohio, assignor to Portage Electric Products, Inc., North Canton, Ohio

Filed Jul. 16, 1980, Ser. No. 169,469

Int. Cl.³ H01H *37/74*

U.S. Cl. 337—343 **7 Claims**



1. A creepless, snap action thermostat comprising:

a. a first movable contact attached to a snap action bimetallic arm;

b. a second movable contact attached to a cantilever mounted spring arm biased toward said bimetallic arm, wherein said first movable contact and said second movable contact are maintained in mating relationship during current flow through said thermostat;

c. a mechanical stop, said stop preventing continued mating relationship between said second movable contact and said first movable contact following snap action of said bimetallic arm; and

d. wherein the bimetal arm is attached to a first, electrically conductive half of a case for said thermostat, the spring arm is attached to a second, electrically conductive half of the case, and the two halves of the case are separated by an insulator.

4,319,215

NON-LINEAR RESISTOR AND PROCESS FOR PRODUCING SAME

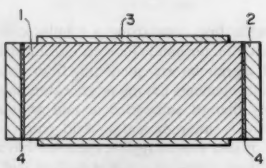
Takeo Yamazaki, and Tadahiko Miyoshi, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 26, 1980, Ser. No. 163,296

Claims priority, application Japan, Jul. 13, 1979, 54-88265

Int. Cl.³ H01C *7/10*

U.S. Cl. 338—21 **10 Claims**



1. A non-linear resistor of a sintered body containing zinc oxide as the main ingredient and Bi_2O_3 as an additional component, comprising the sintered body, a pair of opposite electrodes in electrical contact with the sintered body and an acid-resistant glass coating formed on the exposed surface of said sintered body between said electrodes, wherein said glass coating has a baking temperature of 850° C. or higher, but lower than the sintering temperature for the sintered body and comprises 30 to 75% by weight of SiO_2, 0.3 to 15% by weight of at least one of B_2O_3 and PbO, 2 to 30 by weight of Al_2O_3, less than 30% by weight of alkaline earth metal oxide, less than 40% by weight of ZnO, and less than 25% by weight of TiO_2.

4,319,216

DISCHARGE RESISTOR

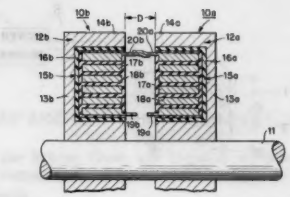
Toshio Ikeda, Yokohama; Ziro Tsukada, and Takashi Mera, both of Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 7, 1980, Ser. No. 128,292

Claims priority, application Japan, Sep. 28, 1979, 54-133366[U]; Mar. 14, 1979, 54-28610

Int. Cl.³ H01C *3/02*

U.S. Cl. 338—61 **13 Claims**



1. A discharge resistor adapted to be mounted on a rotatable shaft of a dynamo-electric device, comprising:

a pair of strip-like resistor elements, each of said elements being spirally wound in a flatwise manner, with the central portion of said spiral winding defining a bore having an effective diameter greater than that of said shaft;

insulation means for insulating adjacent turns of the wound resistor elements from one another;

the wound, insulated resistor elements being arranged and electrically connected in series such that the inductive impedances appearing across the respective elements effectively cancel each other; and

means for supporting the wound, insulated resistor elements approximately coaxially with said shaft at predetermined positions.

4,319,217

PRINTED CIRCUIT

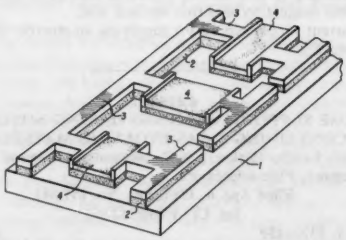
Peter Ambros, Hohenroth, and Erich Gatzke, Bad Neustadt, both of Fed. Rep. of Germany, assignors to Preh Elektrofeinmechanische Werke and Jacob Preh Nachf. GmbH & Co., both of, Fed. Rep. of Germany

Filed Mar. 22, 1979, Ser. No. 22,843

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812497

Int. Cl.³ H01C *1/012*

U.S. Cl. 338—308 **19 Claims**



1. An electrical printed circuit, comprising:

an electrically nonconductive substrate;

integrated resistance layers formed on said substrate and having surface patterns thereon;

electrically conductive solderable circuit paths formed on certain surface patterns on said integrated resistance layers;

said integrated resistance layers include an organic bonding

agent comprising particles which are less than 20 μm in size; and

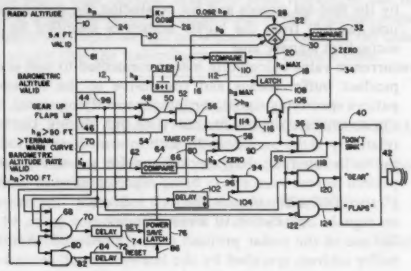
said particles comprising an electrically conducting material taken from the group consisting of pyrolytic carbon, carbon black, graphite or mixture thereof, and catalysts effective for chemical metal deposit.

4,319,218

NEGATIVE CLIMB AFTER TAKE-OFF WARNING SYSTEM WITH CONFIGURATION WARNING MEANS

Charles D. Bateman, Bellevue, Wash., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jan. 4, 1980, Ser. No. 109,580
Int. Cl.[3] G01C *21/00*; G08B *23/00*
U.S. Cl. 340—27 AT **29 Claims**



1. A ground proximity warning system for use in an aircraft having a plurality of flight configurations for generating a warning of aircraft descent during a take-off phase of flight, comprising:

a source of signals representing the flight configuration of the aircraft;

logic means, responsive to said configuration signals, for generating a phase of flight signal indicating that the aircraft is in a take-off phase of flight;

means for generating a signal indicating that the aircraft is descending;

means, responsive to said phase of flight signal and said descent signal, for generating a first warning signal when the aircraft is descending during the take-off phase of flight; and

means, responsive to said configuration signals and said first warning signal, for generating a second warning signal when the aircraft is in a first predetermined configuration when the aircraft is descending during the take-off phase of flight.

4,319,219

AUTOMATIC APPROACH LANDING AND GO-AROUND CONTROL SYSTEM FOR AIRCRAFT

Karl J. Rein-Weston, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 30, 1980, Ser. No. 164,438
Int. Cl.[3] G01C *21/00, 5/00*; G08G *5/00*
U.S. Cl. 340—27 SS **5 Claims**

4. In combination in an aircraft having a pitch axis control system responsive to go-around trigger control signals:

means for generating a first signal representative of specific energy rate of the aircraft;

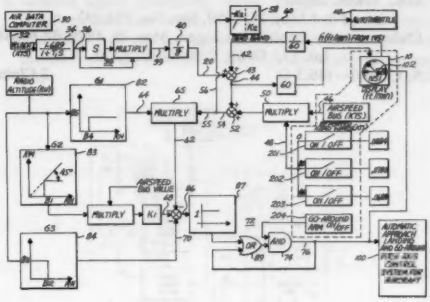
means for generating a second signal representative of desired rate of descent of the aircraft;

means for subtracting said first signal from said second signal thereby generating a third signal;

an autothrottle control system;

means for coupling said third signal to said autothrottle control system for advancing or retarding the throttles in response to wind shear encountered by the aircraft; and

multiplier circuit means responsive to a signal representative of radio altitude and said third control signal for providing a fourth control signal;



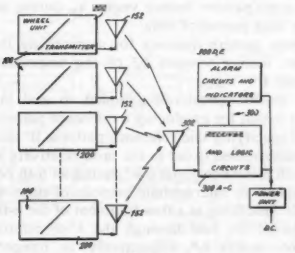
circuit means coupled between said multiplier circuit means and said pitch axis control system for processing said fourth control signal and providing said go-around trigger control signals.

4,319,220

ALARM SYSTEM FOR MONITORING PRESSURIZED VEHICULAR TIRES

Dennis G. Pappas, 200 E. 58th St., New York, N.Y. 10022; Matthew C. Baum, Westwood, N.J.; Samuel N. Small, Valley Stream, N.Y.; Robert T. Adams, Short Hills, N.J., and Robert P. Freedman, East Northport, N.Y., assignors to Dennis G. Pappas, New York, N.Y.

Division of Ser. No. 719,325, Aug. 31, 1976, Pat. No. 4,126,772.
This application Jul. 27, 1978, Ser. No. 928,526
Int. Cl.[3] B60C *23/06*
U.S. Cl. 340—58 **11 Claims**



1. An alarm system for monitoring a pressurized vehicle tire for its air mass comprising in combination, an air mass monitoring sensor within the tire for sensing mass of air within the tire and adapted to produce a continuous signal responsive to mass of air within the tire under normal and abnormal tire inflation conditions, a transmitter within the tire for transmitting a signal produced by the air mass sensor, a power generator within the tire activated by rotation of the tire for generating power for the transmitter and an antenna within the tire by which the signal transmitted to the transmitter may be radiated to a receiver located exterior of the tire.

4,319,221

SIMILARITY CALCULATOR COMPRISING A BUFFER FOR A SINGLE INPUT PATTERN FEATURE VECTOR TO BE PATTERN MATCHED WITH REFERENCE PATTERNS

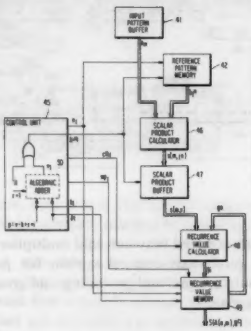
Hiroaki Sakoe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 27, 1980, Ser. No. 153,293

Claims priority, application Japan, May 29, 1979, 54-66589

Int. Cl.[3] **G06K** *9/00;* **G10L** *1/00*

U.S. Cl. 340—146.3 Q **2 Claims**



1. A similarity calculator for calculating a set of similarity measures S(A(u, m), B^c)'s between every one of a set of fragmentary patterns A(u, m)'s of an input pattern A and every one of first through N-th reference patterns B^c (c=1, 2, . . . , N), said input pattern A being given by a time sequence of first through I-th input pattern feature vectors a_i (i=1, 2, . . . , I), said set of fragmentary patterns A(u, m)'s being defined by an end point m (m being representative of each of i) and a plurality of start points u's predetermined relative to the end point m as those parts of said time sequence which consist of (u+1)-th through m-th input pattern feature vectors a_{u+1} to a_m, an n-th reference pattern B^n (n being representative of each of c) being given by a time sequence of first through J^n-th reference pattern feature vectors b_j^n (j^n=1, 2, . . . , J^n), said similarity calculator comprising:

input pattern buffer means for producing said input pattern feature vectors a_i successively in the ascending order, the m-th input pattern feature vector a_m during an m-th relatively long period of time;

a reference pattern memory for memorizing the reference pattern feature vectors b_j^c of the respective reference patterns B^c;

control means operatively coupled to said input pattern buffer means for producing a reference pattern specifying signal specifying said reference patterns B^c successively in a predetermined order in the m-th relatively long period, the n-th reference pattern B^n during an n-th period of first through N-th intermediate poriods of time, a first set of signals specifying in a first fragment of the n-th intermediate period the first through the J^n-th reference pattern feature vectors b_j^n, respectively, an integer specifying signal specifying integers 1 through (J^n+r) (r being representative of a predetermined integer) successively in the descending order in a second fragment next succeeding the first fragment in the n-th intermediate period, one integer k (k being representative of each of 1 through [J^n+r]) during a k-th period of (J^n+r)-th through first relatively short periods of time, and a second set of signals specifying in each relatively short period in the n-th intermediate period those consecutive ones of the first through the J^n-th reference pattern feature vectors b_j^n, respectively, which are prescribed relative to the integer k specified during said each relatively short period;

reference pattern output means connected to said reference pattern memory and respective to the reference pattern specifying signal and the first-set signals for making said reference pattern memory produce the first through the J^n-th reference pattern feature vectors b_j^n in the n-th intermediate period;

scalar product calculating means connected to said input pattern buffer means and said reference pattern output means for calculating, in the n-th intermediate period of the m-th relatively long period, scalar products ($a_m \cdot b_j^n$) of the m-th input pattern feature vector a_m and the respective reference pattern feature vectors b_j^n produced in the meantime;

scalar product buffer means connected to said scalar product calculating means and said control means and comprising a plurality of buffer addresses specifiable by the signals of whichever of the first and the second sets for holding the scalar products ($a_m \cdot b_j^n$) in the buffer addresses specified by the first-set signals and for producing the scalar products ($a_m \cdot b_j^n$) from the buffer addresses specified by the second-set signals; and

recurrence value calculating means connected to said scalar product buffer means and responsive to the reference pattern specifying signal, the integer specifying signal, and the second-set signals for carrying out, during the k-th relatively short period in the n-th intermediate period of the m-th relatively long period and for a v-th reference pattern feature vector b_v (v being representative of each of j^n) specified in the meanwhile by a v-th one c " the second-set signals, calculation of a recurrence value $g_k(m, v)$ by the use of the scalar product ($a_m \cdot b_v$) produced from the buffer address specified by the last-mentioned second-set signal and the recurrence values comprising three recurrence values $g_{k-1}(m-1, v)$'s calculated during the (k−1)-th relatively short period in the n-th intermediate period of the (m−1)-th relatively long period and for three consecutive reference pattern feature vectors b_v's predetermined relative to the v-th reference pattern feature vector b_v, said recurrence value calculating means providing the similarity measure set S(A(u, m), B^c)'s at the end of the m-th relatively long period.

4,319,222

TRANSMITTER APPARATUS FOR AN INFORMATION TRANSMISSION SYSTEM

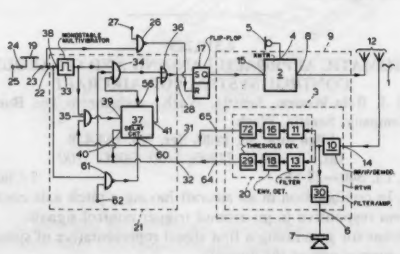
Christopher K. Davis, Crawley, and Richard F. Mitchell, Merstham, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,962

Claims priority, application United Kingdom, Apr. 4, 1979, 11733/79

Int. Cl.[3] **H04Q** *5/00;* **H04J** *6/02*

U.S. Cl. 340—825.5 **6 Claims**



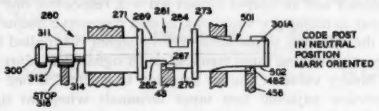
1. Transmitter apparatus for an information transmission system, which system comprises at least two such apparatuses having their outputs coupled to a common transmission path, said apparatus comprising a transmitter, an indicator circuit for generating an output signal indicative of whether or not the

transmission path is in use, and a control circuit having an input for a transmit-request signal, the output of said indicator circuit being coupled to said control circuit and said control circuit having an output thereof, which output is coupled to a control input of said transmitter, for providing a transmission activation signal for said transmitter in response to the application of a transmit-request signal to the control circuit input, the instant of generator of said activation signal being dependent on the output of said indicator circuit whereby, if said indicator circuit is indicating that the transmission path is in use when the transmit-request signal is applied to the control circuit input, said activation signal will be generated at an instant which occurs a predetermined time interval after the indicator circuit subsequently indicates that the transmission path has become clear, and only then provided that the indicator circuit is then indicating that the transmission path is clear, characterised in that the control circuit comprises means for varying said predetermined time interval inversely with respect to the time which elapses between the application of said transmit-request signal to said input and the subsequent indication by the indicator circuit that the transmission path has become clear.

4,319,223
FULL CODE MEANS FOR ELECTROMECHANICAL DECODER

Peter J. Caruso, Wayne, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Jul. 1, 1965, Ser. No. 468,998
Int. Cl.³ E05B *37/00, 45/06*
U.S. Cl. 340—347 P **3 Claims**



3. In a decoder mechanism of a type comprising a code wheel assembly including an inner wheel element and an outer wheel element, means for locking the inner wheel element to the outer wheel element in driving relation, means selectively operable for actuating said locking means in locking and unlocking senses, other means selectively operable for changing the locking and unlocking senses of said locking means, and said other means including means effective to transfer from said one unlocking sense to said other unlocking sense; the improvement in which the last mentioned means includes a pinion gear at an end of each of said locking means, said pinion gear having cutout portions to render said transfer means ineffective upon said locking means being first actuated in a sense ineffective to unlock the inner wheel element from the outer wheel element, and said pinion gear including first and second toothed portions being effecive to render said transfer means effective to transfer from said one unlocking sense to said other unlocking sense upon said locking means being first actuated in a sense effective to unlock the inner wheel element from the outer wheel element.

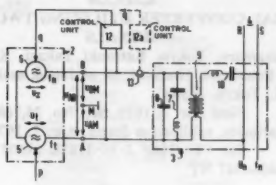
4,319,224
POWERLINE CARRIER CONTROL SYSTEM WITH POWERLINE CURRENT COMPENSATION

Hermann Tappeiner; Ernst-Robert Paessler, both of Erlangen; Kurt Smutny, Neunkirchen, and Karl-Heinz Krügel, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 18, 1979, Ser. No. 40,461
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 2825240
Int. Cl.³ H04B *3/54*
U.S. Cl. 340—310 R **6 Claims**

1. A powerline carrier control system comprising a powerline carrier control transmitter for generating a keyed output voltage at audio frequency to be supplied to an AC powerline that has a predetermined line-frequency, and coupling means comprising a first side connected to said transmitter and a second side connected to said powerline to transfer said keyed output voltage to said powerline, said system comprising:

a. control signal generating means to generate a control signal at said line-frequency, said control signal corresponding to a back AC signal at said line-frequency transmitted from said powerline through said coupling means; and

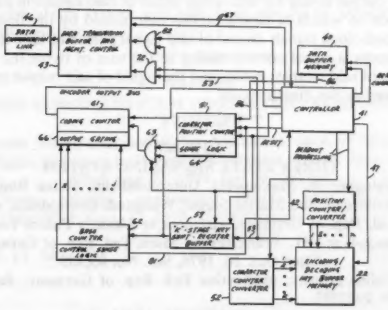


b. superimposing means connected to said control signal generating means to be controlled by said control signal, said superimposing means being connected to said powerline carrier control transmitter to superimpose, on said keyed output voltage at audio frequency therefrom, a compensating voltage at a controlled amplitude and phase relative to said back signal and in opposition thereto to reduce substantially the flow of current at said predetermined line-frequency from said powerline through said powerline carrier control transmitter.

4,319,225
METHODS AND APPARATUS FOR COMPACTING DIGITAL DATA

Dirk R. Klose, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 17, 1974, Ser. No. 470,786
Int. Cl.³ H03K *13/24*
U.S. Cl. 340—347 DD **11 Claims**



8. A method of compacting electronically stored digital signals representing a data file of m records, each said record containing n symbols and each said symbol encoded in a fixed-length j-bit digital code of base r, which comprises the steps of:

(a) storing said digital signals in an electronic storage device having a plurality of r-state storage cells to functionally establish therein an n×m symbol matrix of said data file, each of the rows of said matrix corresponding to a different one of said m records;

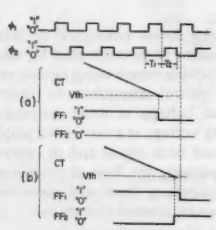
(b) testing the digital signals in a column of said symbol matrix to determine the number k of unique symbols contained therein;

(c) comparing signals representative of the number k and a number p, where $p=r^l$, and if $k<p$, generating an x-bit code for encoding said k unique symbols where x is the smallest integer that satisfies the relationship $r^x \geqq k$;
(d) storing in said storage device a new column of said m symbols encoded in accordance with said x-bit code;
(e) performing method steps (b) through (c), for each of the remaining (n−1) columns in said matrix; and
(f) constructing in said storage device an encoding key of all said x-bit codes generated in step (c).

4,319,226
SIGNAL CONVERTER UTILIZING TWO CLOCK SIGNALS

Hideo Nakamura, Tokyo; Katsuaki Takagi, Kokubunji, and Tsuneo Funabashi, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 3, 1979, Ser. No. 26,768
Claims priority, application Japan, Apr. 7, 1978, 53-40324
Int. Cl.³ G06F *7/38;* H03K *13/02*
U.S. Cl. 340—347 NT **8 Claims**



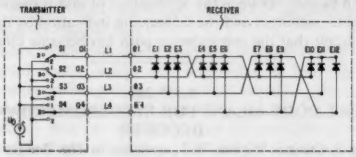
1. A signal converter for converting a time signal having a predetermined level during an arbitrary signal period of time into a digital signal comprising generator means for generating first and second clock signals having recurrence periods equal to each other and phases different from each other, input means for receiving the time signal having the predetermined level during the arbitrary signal period of time, counter means for counting the first clock signals from said generator means in a period of time corresponding to the signal period of time, and output means for delivering either of two signals in dependence on which of time intervals determined by the first and second clock signals an end of said signal period of time lies in, whereby a signal corresponding to the sum of twice the contents of said counter means and the signal of said output means is used as the digital signal.

4,319,227
THREE STATE SIGNALING SYSTEM

Christopher W. Malinowski, Untereisesheim; Heinz Rinderle, Heilbronn, and Martin Siegle, Weinstadt-Beutelsbach, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 16, 1979, Ser. No. 85,335
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2922595
Int. Cl.³ H03K *13/24*
U.S. Cl. 340—347 DD **9 Claims**

1. A digital information transmission device for combining the information contained in a first input signal having a plurality of bits and the information contained in a second input signal having any one of a given number of different values into a combined signal having a number of elements greater than the first plurality of bits and less than the sum of the first plurality of bits and the number of bits required to represent all values of the second input signal, comprising: means presenting a plurality of output terminals equal to the number of elements in the combined signal and each having a respective position relative to the other terminals; signal processing means connected for receiving, in parallel, the first plurality of bits and the second input signal and for supplying, in parallel, to each said output terminal, a signal state representing either one of two binary values or a signal state different from either binary value signal state, said signal processing means including means for supplying the different signal state to at least one selected output terminal the relative position of which corresponds to the value of the second input signal, and means for supplying to each of a plurality of said output terminals, other than the at least one selected output terminal and equal in number to the first plurality of bits, a signal state representing the binary value of a respective one of the first plurality of bits; a plurality of first input terminals each arranged to supply one bit of the first input signal; and a plurality of second input terminals each corresponding to a respective output terminal and each supplying a signal when the value of the second input signal is such that the different signal state is to be supplied to



the corresponding output terminal, and wherein said signal processing means include a plurality of circuits units each having inputs connected, respectively, to one respective second input terminal and two respective adjacent first input terminals and an output connected to a respective one of said output terminals for supplying to said respective output terminal the different signal state when a signal is supplied by said respective second input terminal and a signal state representing the binary value of the bit supplied to a selected one of said respective adjacent first input terminals when no signal is supplied by said respective second input terminal; each said circuit unit being arranged to select that one of said adjacent first input terminals whose bit it represented by the signal state at said respective output terminal as a function of the presence of a signal at a said second input terminal corresponding to an output terminal preceding said respective output terminal in position.

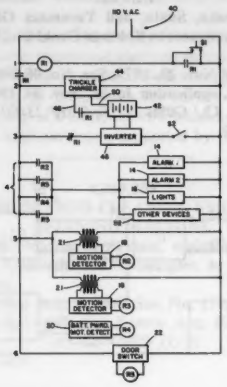
4,319,228
PORTABLE INTRUSION ALARM

Edward H. Daniels, 1961 Delaware, Gary, Ind. 46407

Continuation of Ser. No. 971,506, Dec. 20, 1978, abandoned. This application May 28, 1980, Ser. No. 154,069
Int. Cl.³ G08B *13/00, 13/08, 13/18*
U.S. Cl. 340—521 **6 Claims**

1. A portable intrusion alarm comprising:
an enclosure having an electrical bus contained therein for interconnecting various circuit components,
a power line normally connected to the bus for supplying AC voltage to the bus in said enclosure,
a DC storage battery,
an inverter for producing AC from said battery,
a power control relay for connecting said inverter to the electrical bus upon AC power line failure,
means for initializing said power control relay to utilize power from the AC power line,
motion detecting means connected to said bus and operating a first relay,
magnetic door switch means connected to said bus and operating a second relay,
a plurality of alarm devices located external to said enclosure but connected to one side of said bus,
each of said first and second relays having a set of normally open contacts, said sets being connected in parallel with each other to the other side of said bus and, when ener-

gized, connecting the other side of the bus to said alarm devices,



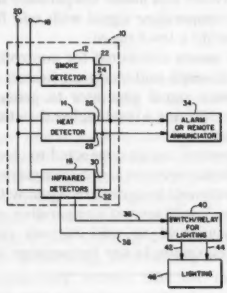
whereby any one of the first and second relays can energize the alarm devices by operation of its associated relay contacts.

4,319,229

ALARM SYSTEM HAVING PLURAL DIVERSE DETECTION MEANS

Gabriel Kirkor, Elmont, N.Y., assignor to Firecom, Inc., Woodside, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,926
Int. Cl.³ G08B *17/10, 17/12, 17/19*
U.S. Cl. 340—521 **14 Claims**



1. A detection system for use in an area having controlled artificial lighting, comprising:

smoke detector means having an altered electrical characteristic in the presence of smoke;

heat detector means having an altered electrical characteristic upon the ambient temperature exceeding a predetermined level;

infrared radiation detector means having altered electrical characteristics upon the presence of a predetermined level of infrared radiation;

alarm means electrically connected to said smoke detector, means, said heat detector means, and said infrared radiation detector means, said alarm means being responsive to each of said altered electrical characteristics of said smoke detector means, said heat detector, and said infrared radiation detector, whereby upon the occurrence of any of said altered electrical characteristics said alarm means produces an alarm signal; and

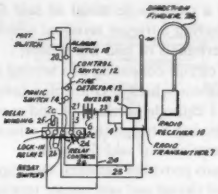
means electrically connected to said infrared radiation detector means being responsive to said altered electrical characteristics thereof for controlling the operation of the artificial lighting.

4,319,230

RADIO ALARM SYSTEM

Eugene W. Fowler, 816 Superba Ave., Venice, Calif. 90291, and Raymond W. Fowler, 2465 Amherst Ave., Los Angeles, Calif. 90064

Filed Jan. 15, 1980, Ser. No. 112,209
Int. Cl.³ B60R *25/10*
U.S. Cl. 340—539 **18 Claims**



1. A radio alarm system with back up capability having electric circuits for monitoring, controlling, operating and utilizing an electric circuit having electrical conductors including normally closed switches, said radio alarm system comprising

relay means having electrical conductors;

a source of electrical energy;

a radio transmitter for transmitting radio signals; and

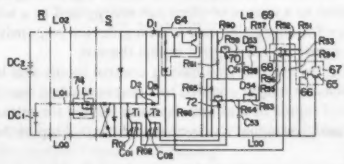
electrically conductive leads electrically connecting the relay means, the source of electrical energy and the radio transmitter in a back up circuit in a manner whereby the relay means is energized by electrical conductors of the electric circuit having normally closed switches and maintains said relay means normally open as long as said radio alarm system is in operative condition and when an electrical conductor of said radio alarm system is open-circuited, said relay means is deenergized and closes the back up circuit to actuate the transmitter to transmit radio signals indicating that an electrical conductor of a closed circuit of said radio alarm system has been open-circuited, said closed circuit of said radio alarm system and said back up circuit constituting different circuits.

4,319,231

FIRE SENSING SYSTEM PROTECTED FROM NOISE FACTORS

Masaki Maruyama, and Kohei Nakamura, both of Machida, Japan, assignors to Hochiki Corporation, Tokyo, Japan

Filed Aug. 27, 1979, Ser. No. 69,842
Claims priority, application Japan, Aug. 26, 1978, 53/116219[U]; Nov. 27, 1978, 53/161798[U]
Int. Cl.³ G08B *17/10*
U.S. Cl. 340—587 **3 Claims**



1. A fire sensing system comprising:

a fire sensor having a pair of load terminals and a pair of output terminals, said fire sensor being so constructed as to detect a predetermined combustion quantity relying

upon a voltage applied to said load terminals and to produce a signal from said output terminals;

a first d-c power supply and a second d-c power supply which are coupled in parallel with said pair of load terminals of said fire sensor;

a first diode coupled between said first d-c power supply and said load terminals of said fire sensor and a second diode coupled between said second d-c power supply and said load terminals of said fire sensor such that the voltage of said first and second d-c power supplies are fed independently to said load terminals of said fire sensor;

a first signal circuit consisting of a first semiconductor switching element which is connected between an anode terminal and a cathode terminal of said first d-c power supply, and having a trigger terminal which is coupled to said output terminals of said fire sensor;

a second signal circuit consisting of a second semiconductor switching element which is connected between an anode terminal and a cathode terminal of said second d-c power supply, and having a trigger terminal which is coupled to said output terminals of said fire sensor;

a first delay means provided between the trigger terminal of said first signal circuit and said output terminals of said fire sensor to delay the trigger signals; and

a second delay circuit provided between the trigger terminal of said second signal circuit and said output terminals of said fire sensor to delay the trigger signals by a time which is longer than the delay time of said first delay means;

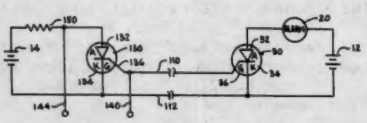
whereby external noise energy causes said first signal circuit to operate, while said second signal circuit is stably maintained without being affected by the external noise.

4,319,232

LIQUID LEAKAGE DETECTOR

Frank C. Westphal, 522 Summerset Ct., Indian Harbour Beach, Fla. 32937, and Raymond G. Olson, 2 Sinclair Cir., Indialantic, Fla. 32903

Filed Mar. 19, 1980, Ser. No. 131,754
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—604 **13 Claims**



1. A liquid detection device comprising in combination:

a thyristor device having control inputs and having outputs coupled to a source of electrical energy and to a warning device for energizing said warning device responsive to a first signal at said control inputs thereof;

a second thyristor device having control inputs and having at least one output coupled to a corresponding one of said control inputs of said first thyristor device for retransmitting said first signal received at said control inputs thereof; and

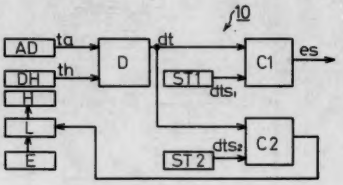
probe means comprising at least two conductors coupled to said control inputs of said second thyristor device and spaced from each other by an insulator, said probe means for generating said first signal responsive to a liquid operatively bridging at least two of said conductors.

4,319,233

DEVICE FOR ELECTRICALLY DETECTING A LIQUID LEVEL

Michihiro Matsuoka, Sunto, and Yasumasa Ohba, Numazu, both of Japan, assignors to Kokusan Denki Co., Ltd., Numazu, Japan

Filed Nov. 28, 1979, Ser. No. 98,298
Claims priority, application Japan, Nov. 30, 1978, 53-147252
Int. Cl.³ G08B *21/00*; G01F *23/00*
U.S. Cl. 340—622 **1 Claim**



1. A device for electrically detecting a liquid level comprising:

an electrical heater disposed flush with a liquid level to be detected;

a heater temperature detector to electrically detect a temperature of said electrical heater to generate a heater temperature signal;

an environment temperature detector to electrically detect an environment temperature to generate an environment temperature signal;

a first reference signal generator to generate a first reference signal depending on the range of the environment temperatures at which said liquid level is to be detected;

a first comparative circuit connected to electrically compare a different between said heater temperature signal and said environment temperature signal with said first reference signal to generate a level signal;

current control means connected for controlling a current which flows through said electrical heater;

a second reference signal generator to generate a second reference signal having a level higher than that of said first reference signal; and

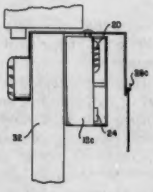
a second comparative circuit connected to electrically compare said different between said heater temperature signal and said environment temperature signal with said second reference signal, said second comparative circuit having an output connected to said current control means whereby the maximum heater temperature is limited.

4,319,234

SMOKE DETECTOR WITH DUAL SENSORS

Royal K. Rice, 2434 Sleepy Hollow, Glendale, Calif. 91206

Filed Jul. 29, 1980, Ser. No. 173,665
Int. Cl.³ G08B *17/10*
U.S. Cl. 340—628 **7 Claims**



1. In a smoke and fire detector device, including a housing, incorporating a sensor, an electric power source and an alarm

signaling box, connected electrically to each other for smoke and fire induced activation of the device, comprising:

(a) carrier means mounted to an exterior portion of the housing.

(b) a second sensor electrically interconnected with the power source, sensor and alarm signaling box, mounted to the carrier means in a spaced relationship to the sensor in the housing, so that, when the carrier means is placed across the top of a door, the two sensors may activate the device in adjacent rooms separated by the door.

4,319,235

YARN-PIECING AND CLEANING SYSTEM FOR A SPINNING MACHINE

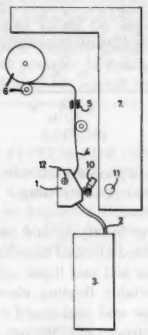
Rade Janousek, Mulhouse, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Mulhouse, France

Filed Aug. 4, 1980, Ser. No. 174,898

Claims priority, application France, Aug. 10, 1979, 79 20447

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—677 **9 Claims**



1. In an open-end yarn spinning machine having a plurality of spinning units, each including a fiber sliver supply means from which fiber slivers are fed to the input of said spinning unit, and at least one automaton carriage adapted to travel on rail means along said spinning units, each spinning unit being provided with detecting means operable to detect a break in the yarn downstream of said spinning unit and to deliver a signal in response to which said automaton carriage travels to a position adjacent said spinning unit for remedying the said yarn break by performing yarn-piecing operations, the improvement comprising second detector means operatively connected with said spinning unit for detecting the interruption of supply from said sliver supply means and emitting a signal to said automaton, receiving and control means operatively associated with said automaton carriage to receive said signal from said second detector and in response thereto override said yarn break detecting means to prevent said automaton carriage from stopping adjacent the spinning unit to which sliver supply from the sliver supply means has been interrupted and to enable it to travel to another spinning unit where a malfunction is detected.

4,319,236

HALL EFFECT POSITION DETECTOR

Paul H. Brace, and Wilbur P. Balmer, both of Rockford, Ill., assignors to Barber-Colman Company, Rockford, Ill.

Filed Aug. 7, 1980, Ser. No. 176,163

Int. Cl.³ G01R *33/06*

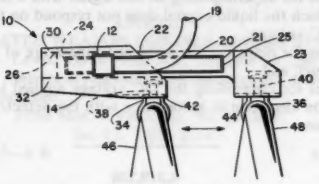
U.S. Cl. 340—679 **8 Claims**

1. A position detector for use in providing an electrical position feedback signal indicative of the position of a movable, spring-biased element, comprising:

a sensor support member having means for mounting said sensor support member on a first coil of the spring biasing the movable element;

a magnetic flux density sensor mounted on said sensor support member;

a magnet support member having means for mounting said magnet support member on a second coil of the spring, a portion of said magnet support member guidingly engaging a portion of said sensor support member to permit



relative linear movement therebetween in response to spring movement;

a magnet mounted on said magnet support member portion, said magnet producing a magnetic field adjacent said sensor;

said sensor producing a variable electrical signal proportional to the sensed flux density of the magnetic field in response to relative movement between said first and second spring coils, said signal comprising a position feedback signal indicative of the position of the spring biased element.

4,319,237

BRIGHTNESS ADJUSTING CIRCUIT OF LIQUID CRYSTAL MATRIX PANEL FOR PICTURE DISPLAY

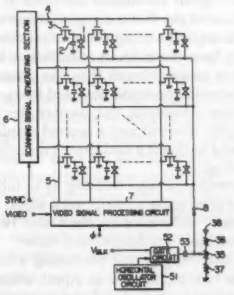
Tamotsu Matsuo, Osaka; Susumu Ide, Katano, and Hiroyuki Irie, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 8, 1980, Ser. No. 120,000

Claims priority, application Japan, Feb. 14, 1979, 54-16606; Jun. 19, 1979, 54-77330; Sep. 20, 1979, 54-121101

Int. Cl.³ G09G *3/36*

U.S. Cl. 340—713 **3 Claims**



1. A brightness adjusting circuit of a liquid crystal matrix panel for picture display comprising:

an X-Y matrix panel having a plurality of picture elements each connected at one terminal to a semiconductor switching element and a memory element and at another terminal to an electrode common to all the picture elements;

a plurality of X electrodes and Y electrodes connected to control said semiconductor switching elements, whereby a gate signal applied to an X electrode transfers a voltage applied to said Y signal to said memory element;

means for applying a video signal to said Y electrodes;

means for applying a scanning gate signal to said X electrodes and for storing in said memory element the voltage corresponding to the video signal applied to said Y electrode by successively making the semiconductor switching elements conductive;

means for applying a variable DC voltage to said common electrode whereby the brightness of a picture displayed may be varied;

means for superimposing an AC signal with a frequency to which the liquid crystal does not respond on the variable DC voltage;

means for detecting the ambient temperature of said matrix panel; and

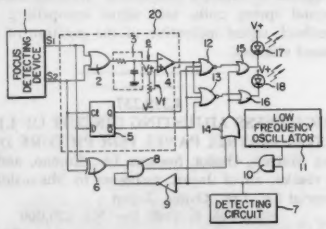
means for controlling the DC voltage applied to the common electrode in accordance with the detected temperature.

4,319,238

CAMERA DISPLAY DEVICE

Akira Ogasawara; Ken Utagawa, both of Yokohama; Kunihisa Hoshino, and Hiroshi Shirasu, both of Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jan. 29, 1980, Ser. No. 116,393
Claims priority, application Japan, Feb. 6, 1980, 54/11837
Int. Cl.³ G09G *3/00*
U.S. Cl. 340—753 **2 Claims**



1. In a camera including a focus detecting device and a display device, wherein the focus detecting device produces a first a.c. signal and a second a.c. signal, the phases of the first and second a.c. signals are almost the same at in-focus condition and the phase of the first a.c. signal is more advanced than the phase of the second a.c. signal at a first condition deviated toward one side from the in-focus condition, while the phase of first a.c. signal is more delayed than the phase of the second a.c. signal at a second condition deviated toward the other side from the in-focus condition; the display device is provided with a first display element and a second display element two of which are used to display said three conditions, said display device comprising:

(a) a first detecting circuit receiving as an input said two a.c. signals and producing a conformity signal when detecting that the phase difference between said two received a.c. signals is within a predetermined value;

(b) a second detecting circuit producing a first signal on the basis of the two a.c. signals as inputs when detecting that a relation of the phases of said two a.c. signals corresponds to said first condition and producing a second signal when detecting that a relation of the phases of said two a.c. signals corresponds to said second condition;

(c) a first circuit for operating said first display element depending on at least one input of said conformity signal and said first signal; and

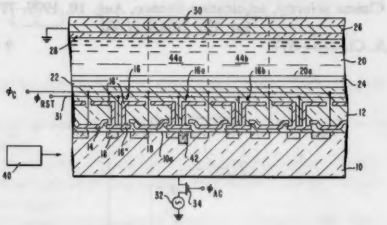
(d) a second circuit for operating said second display element depending upon at least one input of said conformity signal and said second signal, whereby said first and second circuits render both of said first and second display elements operative when said conformity signal is produced, render said first display element operative and said second display element inoperative when only said first signal is produced, and render said second display element operative and said first display element inoperative when only said second signal is produced.

4,319,239

CCD CAPACITANCE MODULATION MATRIX FOR LIQUID CRYSTAL DISPLAYS

Craig P. Stephens, San Jose, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 27, 1980, Ser. No. 153,304
Int. Cl.³ G09G *3/18*
U.S. Cl. 340—784 **15 Claims**



1. An image producing system including a capacitance modulation matrix, said matrix comprising:

a semiconductive base;

a liquid crystal layer overlying said base;

a plurality of insulated clocked transfer electrodes disposed between said base and said liquid crystal layer;

a plurality of resettable floating electrodes also disposed between said base and said liquid crystal layer, each of said floating electrodes comprising:

(a) a second electrode section overlying said base between adjacent ones of said transfer electrodes, and

(b) a first electrode section facing said liquid crystal so as to control the electrical potential of an optical matrix portion thereof;

clock signal means connected to said floating electrodes and to said transfer electrodes for transferring and storing charge packets in said semiconductive base beneath selected ones of said floating electrodes; and

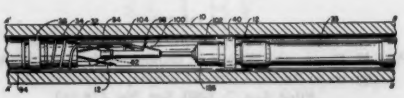
means for coupling a sinusoidal voltage across said liquid crystal and said base.

4,319,240

ELECTRICAL CONNECTOR FOR BOREHOLE TELEMETRY APPARATUS

Frederick A. Stone, Durham; Charles W. Helm, Rocky Hill, and Ralph F. Spinnler, Glastonbury, all of Conn., assignors to Teleco Oilfield Services Inc., Middletown, Conn.

Filed Aug. 30, 1979, Ser. No. 71,746
Int. Cl.³ G01V *1/40*
U.S. Cl. 340—856 **15 Claims**



1. Apparatus for routing electrical conductors of a borehole telemetry system, the telemetry system being positioned within

a drill pipe section and including a mud turbine having a discharge shroud, the turbine and shroud being coaxial with the pipe section, an annular chamber being defined between the shroud and pipe section inner wall, said apparatus comprising:

a first electrical connector positioned at a first station in the borehole telemetry system;

a second electrical connector positioned at a second station in the borehole telemetry system, said first and second stations being located at opposite sides of the turbine and its discharge shroud;

elongated casing means for shielding at least a first electrical conductor, said casing means extending between said first and second electrical connectors, a first end of said casing means being connected to said first electrical connector and a second end of said casing means being connected to said second electrical connector, said casing means enveloping electrical conductors which extend between said first and second electrical connectors, said casing means including a flexible segment, said casing means flexible segment being defined by a plurality of turns of said casing means which pass around the exterior of the turbine discharge shroud;

a fluid within said casing means and filling the interior volume thereof; and

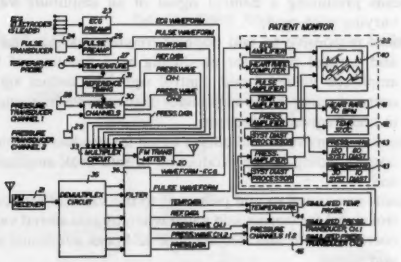
pressure compensating means for sensing changes in pressure in the drill pipe section, said pressure compensating means varying the pressure of the fluid within said casing means as a function of the sensed pressure.

4,319,241

TELEMETERING SYSTEM FOR OPERATING ROOM AND THE LIKE

Bruce E. Mount, Los Angeles County, Calif., assignor to Medimetric Company, Los Angeles, Calif.

Filed Nov. 1, 1978, Ser. No. 956,593
Int. Cl.³ G08G *19/04, 19/28*
U.S. Cl. 340—870.38 **15 Claims**



10. A telemetering system for transmitting pressure information between a pressure transducer and a pressure monitor, said pressure information including a recurring waveform with a peak value and a trough value, including in combination:

a multisignal transmission link having transmitter and receiver;

first means including means for connecting said transducer as an input and providing an output voltage varying as a function of said transducer output;

second means for connecting said first means output voltage as one signal of said transmission link and representing said recurring waveform;

third means including means for connecting said first means output voltage as an input and providing two output signals varying as the peak value and trough value, respectively, of the input thereto, and representing the peak and trough values, respectively, of said recurring waveform;

fourth means for connecting said third means output signals as signals to said transmission link;

fifth means including means for connecting said one signal from said transmission link as input and providing two output signals varying as the peak value and trough value, respectively, of the input thereto;

sixth means including means for connecting as inputs, said one signal and said third means output signals from said transmission link and said fifth means outputs, and providing an output signal corresponding to said first means output voltage; and

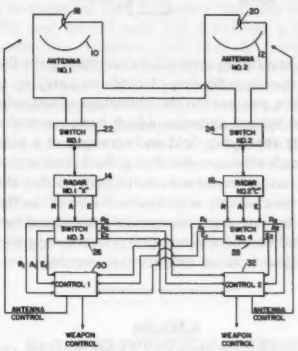
seventh means including means for connecting said sixth means output signal as input and providing resistance varying as a function of the input thereto, as output for connection as input to said monitor.

4,319,242

INTEGRATED WEAPON CONTROL RADAR SYSTEM

Bernard L. Lewis, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 4, 1980, Ser. No. 127,014
Int. Cl.³ G01S *13/87*
U.S. Cl. 343—6 R **4 Claims**



2. A system for integrating a plurality of weapon control radars and the antennas and weapon launchers associated therewith in order to provide tracking information for the target being tracked by each weapon control radar over a plurality of different frequency bands and from a plurality of different antennas comprising:

a plurality of weapon control radar systems operable over different frequency bands, each capable of tracking and providing information for locating a specific target;

a plurality of broadband antennas for transmitting and receiving broadband signals, each antenna associated with a specific weapon launcher to form an antenna and launcher pair for a given weapon control radar system;

first switching means for coupling each of said plurality of radar systems to each of said plurality of antennas such that the individual frequency band output signals from a given radar system tracking a specific target are transmitted through each of said plurality of antennas and return signals are received by said antennas and processed by said radars in their respective frequency bands for said specific target;

a plurality of control circuits, one for each antennas and weapon launcher pair, for controlling each antenna and weapon launcher to track and attack, respectively, a specific target; and

second switching means for coupling the return signal range, azimuth, and elevation information for said specific target from each of said radar systems to the control circuit controlling the antenna and weapon launcher pair tracking that specific target.

4,319,243

AIRPORT-SURVEILLANCE SYSTEM

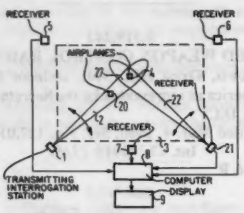
Erwin Vachenauer, Haar; Gerhard Wagner, Waakrichen, and Bernd Mueller, Poecking, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 8, 1980, Ser. No. 119,792

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1979, 2911313

Int. Cl.³ G01S *13/78*

U.S. Cl. 343—6.5 R 3 Claims



1. Airport monitoring system for determining the flying field position and the identification of airplanes carrying transponders, or the like, pursuant to the utilization of secondary radar with first and second antennas which have narrow radiation lobes scanning the flying field and arranged at a suitable distance from each other on the flying field, and said radiation lobes of said two antennas are controllable so that their overlapping zone successively searches each area of the flying field and whereby the interrogation signal is transmitted by said first antenna (1) and second antenna (21) is a receiving antenna for receiving a signal from an airplane transponder.

4,319,244

SHORT-RANGE DOPPLER RADAR

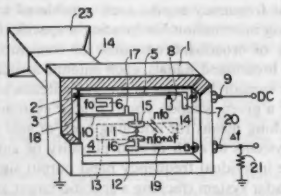
Yukitsugu Hirota, Yokohama; Yoichi Kaneko, Tokorozawa; Kenji Sekine, Hinode; Akira Endo, Katsuta, and Katsuhiro Kimura, Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd. and Hitachi, Ltd., both of Tokyo, Japan

Filed Jan. 17, 1980, Ser. No. 112,744

Claims priority, application Japan, Jan. 22, 1979, 54-4874

Int. Cl.³ G01S *13/58*

U.S. Cl. 343—8 27 Claims



1. A short-range Doppler radar comprising:

(a) an oscillator;

(b) a frequency multiplier device which is driven by an output of said oscillator and which forms a range of higher harmonic frequency components of a frequency of the oscillator output;

(c) filter means for selecting one of the higher harmonic frequency components formed by said frequency multiplier device;

(d) means for radiating the selected higher harmonic frequency component provided at the output of said filter means and for receiving reflected waves of the radiated component; and

(e) means for detecting the Doppler frequency in the received reflected waves.

4,319,245

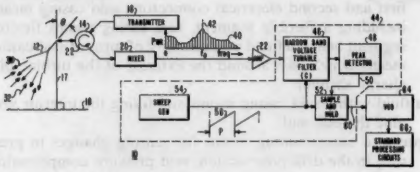
DOPPLER SIGNAL PROCESSING APPARATUS

Daniel D. Mawhinney, Livingston, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 29, 1980, Ser. No. 154,238

Int. Cl.³ G01S *13/60*

U.S. Cl. 343—8 9 Claims



1. In a doppler type speed sensor which includes means for transmitting a continuous frequency signal into the atmosphere and receiving resulting reflected return signals, a mixer for mixing the transmitted and return signals to produce a doppler frequency signal indicative of the relative speed between said sensor and objects from which the transmitted signal is returned and wherein the doppler frequency signal comprises a spectrum of frequencies of various amplitudes and having a frequency at a peak amplitude representing said speed, the combination comprising:

means producing a control signal of an amplitude value varying with time;

means responsive to said doppler frequency signal and to said control signal for producing as a function of the amplitude value of said control signal an output signal corresponding to the amplitudes of successive frequencies in said frequency spectrum;

means responsive to said output signal for producing a pulse corresponding to the production of said peak amplitude; and

means responsive to said pulse and to the value of said control signal for storing said value whereby said stored value corresponds to said frequency of said peak amplitude and said speed.

4,319,246

RADAR SYSTEMS

Philip J. Fitz, Baddow, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Jul. 21, 1976, Ser. No. 706,482

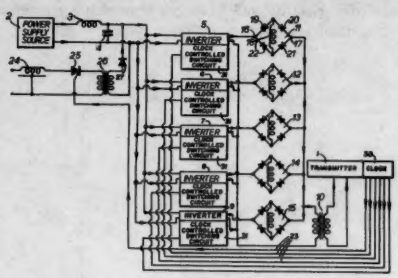
Claims priority, application United Kingdom, May 1, 1976, 17885/76

Int. Cl.³ G01S *7/28*

U.S. Cl. 343—17.1 R 10 Claims

1. A radar system comprising a radar transmitter having a rated output and a power supply arrangement connected to said radar transmitter and operative normally to supply power to said transmitter to obtain an average power output, and power output increasing means for increasing the average power output of the radar transmitter during a dwell time

during which the radar beam traverses a target of interest, said power output increasing means including means for supplementing said power supply during periods in which the average power output of the radar transmitter is increased.



4,319,247

TARGET DETECTING APPARATUS EQUIPPED WITH TESTING DEVICE FOR SIMULATING TARGETS AT DIFFERENT RANGES

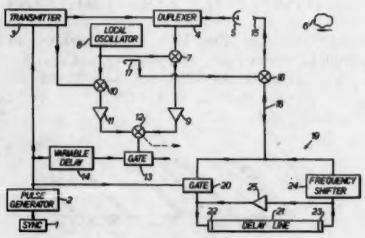
Kenneth A. J. Warren, Great Baddow, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Oct. 24, 1979, Ser. No. 88,061

Claims priority, application United Kingdom, Nov. 22, 1978, 45572/78

Int. Cl.³ G01S 7/40

U.S. Cl. 343—17.7 **5 Claims**



1. Apparatus for detecting an object of interest comprising: a transmitter for transmitting a signal to the object; a receiver for receiving a signal after reflection from the object; and a testing device for simulating objects at different ranges, the testing device including means for taking a sample of said signal and means for transmitting the sample to the receiver at at least two different times, so as to simulate at least two respective objects, whereby correct functioning of the transmitter and receiver can be tested, said testing device comprising a delay line connected to receive the sample and a feed-back connection for feeding the sample at least a second time through the delay line, said feed-back connection including an amplifier, the gain of said amplifier and the attenuation caused by said delay line being such that the amplitude of the sample after passing once through the delay line is greater than the amplitude after passing twice through said delay line.

4,319,248

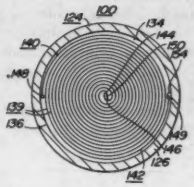
INTEGRATED SPIRAL ANTENNA-DETECTOR DEVICE

Richard P. Flam, Doylestown, Pa., assignor to American Electronic Laboratories, Inc., Colmar, Pa.

Filed Jan. 14, 1980, Ser. No. 111,532

Int. Cl.³ H01Q 1/36

U.S. Cl. 343—701 **8 Claims**



1. An integrated antenna-detector device comprising a pair of antenna elements providing a spiral antenna means for receiving radio frequency signals over a broadband of frequencies with an extended high frequency limit, the elements each having first and second ends and providing a pair of interwound conductive windings with their first ends positioned proximate to each other at the center of the antenna means for providing sensitivity at the high frequency limit of received radio frequency signals and having their second ends displaced from the first ends and positioned at the periphery of the antenna means, a detector unit connected between the positioned proximate to the first ends of the antenna elements for detecting radio frequency signal received by the antenna elements and providing detected video output signals, and signal output means connected with the antenna elements at a location substantially displaced from the detector unit and the first ends of the antenna elements for receiving the detected video output signals.

4,319,249

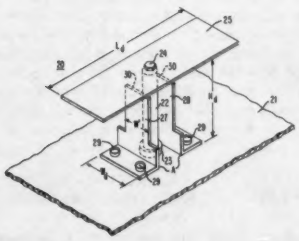
METHOD AND ANTENNA FOR IMPROVED SIDELOBE PERFORMANCE IN DIPOLE ARRAYS

Gary E. Evans, Baltimore, and William F. Hoover, Jr., Hanover, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 30, 1980, Ser. No. 116,701

Int. Cl.³ H01Q 1/52, 21/06

U.S. Cl. 343—703 **9 Claims**



1. A method of determining the geometry of the individual elements of an array of dipole antenna elements to decrease the sidelobes thereof wherein each of the elements includes a pair of dipole conductors extending substantially parallel to a metallic ground plane and a conductive post extending substantially perpendicular to the ground plane to support each of the conductors a predetermined distance from the ground plane, said method comprising

utilizing a structure that includes a conductive ground plane with a pair spaced opposing planar conductors conduc-

tively attached at one end to the ground plane and extending perpendicular therefrom to terminate at their outer ends a selected distance from a planar conductive member that is insulatively mounted substantially parallel to and spaced a selected distance from the ground plane and the outer ends of the pair of conductors,

connecting a network analyzer across the ground plane and the conductive member,

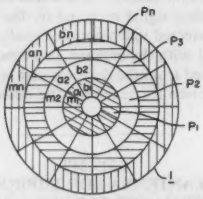
selecting the distance between the ground plane and the conductive member while maintaining the spacing between said member and the outer ends of the conductors to maximize impedance without substantially degrading the dominant TEM mode, and

constructing each dipole antenna element of the array to conform to the selected dimensions of the utilized structure.

4,319,250
OFFSET DUAL-REFLECTOR AERIAL HAVING TAPERED REFLECTOR SEGMENTS IN MAIN REFLECTOR

Tadashi Takano, Yokosuka; Motoo Mizusawa, Kamakura; Shinichi Betsudan, Amagasaki, and Shigeru Sato, Amagasaki, all of Japan, assignors to Nippon Telegraph & Telephone Public Corp. and Mitsubishi Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Jun. 28, 1978, Ser. No. 919,954
Claims priority, application Japan, Jun. 29, 1977, 52-77477
Int. Cl.³ G09F *9/00*
U.S. Cl. 343—781 CA **3 Claims**



1. An offset dual-reflector aerial comprising:

a primary radiator radiating an electric field,

a main reflector formed by a part of a revolutionary secondary-curved surface and radiating an electric field radiated from said primary radiator to a space, a plurality of reflector arranged between said primary radiator and said main reflector to reflect an electric field radiated from said primary radiator to said main reflector, in which said main reflector is formed by a plurality of tapered segmental reflectors and the surfaces of at least two reflectors arranged between said primary radiator and said main reflector are the shaped surfaces by which arbitrary amplitude and phase distributions of electric field can be realized at the aperture of said main reflector.

4,319,251
INK JET PRINTING EMPLOYING REVERSE CHARGE COUPLING

Robert I. Keur, Niles, Ill., assignor to A. B. Dick Company, Chicago, Ill.

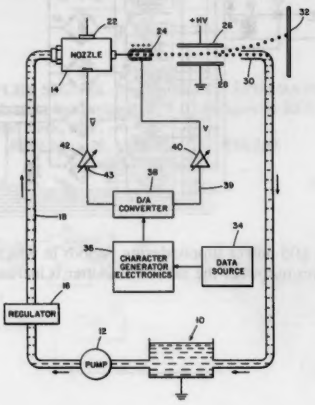
Filed Aug. 15, 1980, Ser. No. 178,530
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—1.1 **12 Claims**

1. In an ink jet printing system utilizing electrically conductive ink a method of highly charging ink drops which are formed by forcing said ink through a nozzle whereby the drops may be deflected onto a printing medium as a function of their charge, said method comprising the steps of:

(a) producing a first voltage of a first polarity having a time varying magnitude,

(b) applying said first voltage to a charge electrode placed in operative proximity to the flight path of said ink drops,

(c) producing a second voltage of the opposite polarity from said first polarity and having a time varying magnitude substantially equal to said first voltage,



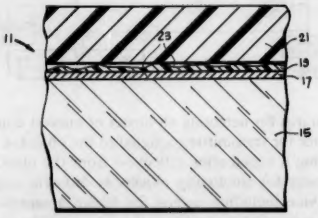
(d) applying said second voltage to the electrically conductive ink prior to the formation of said drops,

whereby as the ink drops are formed a charge is trapped on each drop, said charge having said opposite polarity and exceeding the magnitude of said first voltage by a substantial amount.

4,319,252
OPTICAL DATA STORAGE AND RECORDING MEDIUM HAVING A REPLACEABLE PROTECTIVE COVERPLATE

Jerome Drexler, Los Altos Hills, Calif., assignor to Drexler Technology Corporation, Mountain View, Calif.

Filed Jul. 21, 1980, Ser. No. 170,801
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 **5 Claims**

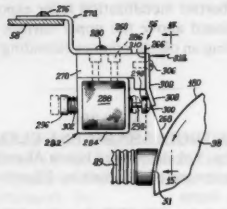


1. A reflective data storage and recording medium comprising, a reflective data surface having transparent coating in intimate contact with the data surface, the coating having a thickness in the range of 1.5 to 15 microns and a slightly bumpy upper surface contacting a transparent coverplate, said bumpy upper surface defining air gaps relative to the coverplate over at least 50% of the upper surface, said air gaps having a maximum depth of one micron under hand pressure on the coverplate.

4,319,253
ELECTRONIC STENCIL CUTTER

Arthur J. Heyer, Forest Park; Edward M. Springer, Chicago, and Wallace C. Clay, Oakbrook, all of Ill., assignors to Heyer Inc., Chicago, Ill.

Division of Ser. No. 77,160, Sep. 20, 1979, which is a division of Ser. No. 894,528, Apr. 10, 1978. This application Aug. 7, 1980, Ser. No. 176,011
Int. Cl.[3] G01D *15/00*
U.S. Cl. 346—139 C 4 Claims

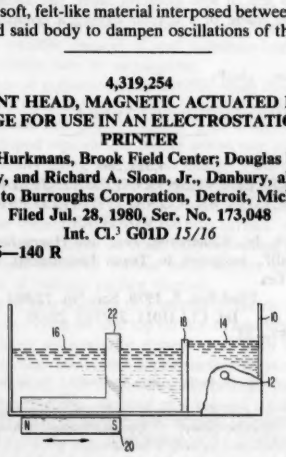


1. In a stylus assembly for an electronic stencil cutter for perforating an electrostencil sheet mounted on a rotatable drum, said stylus assembly comprising:
a frame adapted to be mounted adjacent the drum;
a solenoid, a stylus, and stylus guide means supported by said frame;
said solenoid having a plunger with a nose end extendible toward the drum when the solenoid is energized and retractible therefrom by spring means when the solenoid is deenergized;
said stylus comprising an elongated, flat, blade-like body member of flexible, elastic, electrical insulating material having a wire electrode extending from one end thereof;
said stylus guide means having a slot for receiving and supporting said stylus in position for engagement by the nose end of said plunger to thereby press the tip of said wire electrode against an electrostencil; the improvement comprising
a layer of soft, felt-like material interposed between said nose end and said body to dampen oscillations of the body.

4,319,254
CONSTANT HEAD, MAGNETIC ACTUATED INK JET CARTRIDGE FOR USE IN AN ELECTROSTATIC INK JET PRINTER

Antoon M. Hurkmans, Brook Field Center; Douglas R. Arnoldi, Southbury, and Richard A. Sloan, Jr., Danbury, all of Conn., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jul. 28, 1980, Ser. No. 173,048
Int. Cl.[3] G01D *15/16*
U.S. Cl. 346—140 R 10 Claims

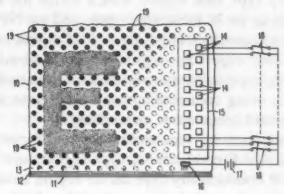


1. A constant head, magnetically actuated, disposable ink jet cartridge wherein an external magnetic force is used to activate an internal plunger to raise ink in the area of said ink jet up to a predetermined level and constantly maintain it at said level comprising:
an ink reservoir;
a quantity of ink contained therein;
said ink reservoir further comprising at least a first and a second section;
a fixed height wall means separating said first and second sections;
a plunger-like means movably mounted in said first section;
said plunger-like means including a magnetic portion;
an ink jet nozzle means mounted in said second section; and
an external magnetic means which operates in conjunction with the magnetic portion of said plunger-like means to thereby activate said plunger means when said ink reservoir is moved in appropriate relationship therewith, the activation of said plunger-like means causing the ink in said first section to exceed the fixed height of the separating wall and thereby flow into said second section, with repeated activations of said plunger-like means maintaining the ink in said second section at the fixed height of the separating wall resulting in a constant head of pressure in said second section.

4,319,255
TINTED METALLIZED RECORDING MEDIUM

John A. Franczyk, Sloan; Willard C. Hamm, Vestal, and Russell T. White, Jr., Binghamton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,764
Int. Cl.[3] G01D *15/08;* H04N *1/22*
U.S. Cl. 346—163 24 Claims

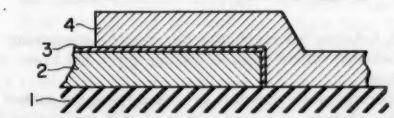


1. The method of recording by selective removal of material comprising the steps of:
coating one surface of an insulative base material of a first color with a metal layer of a second color;
overprinting the exposed surface of said metal layer with discrete areas of an ink of a third color to effect a hue on said metal layer; and
selectively removing via electrodes said metal layer at predetermined locations to expose said base layer of said first color.

4,319,256
JOSEPHSON JUNCTION ELEMENT

Yoshinobu Tarutani, Uenohara; Hirozi Yamada, Hachioji, and Ushio Kawabe, Hamuramachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 2, 1980, Ser. No. 146,163
Claims priority, application Japan, May 16, 1979, 54/64227
Int. Cl.[3] H01L *27/12*
U.S. Cl. 357—5 8 Claims



1. In a sandwich-type Josephson junction element having a base electrode which is made of a superconductive material, a barrier layer which is formed of an insulating film and/or

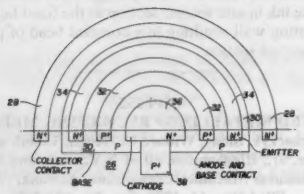
semiconductor film disposed on the base electrode, and a counter electrode which is made of a superconductive material disposed on the barrier layer, a Josephson junction element characterized in that said counter electrode is made of a Mo.-Re. alloy which contains 10 to 90 atomic-% of Re.

4,319,257

LOW THERMAL COEFFICIENT SEMICONDUCTOR DEVICE

James D. Beasom, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jan. 16, 1980, Ser. No. 112,618
Int. Cl.[3] H01L *29/90*
U.S. Cl. 357—13 **27 Claims**



1. In an integrated circuit having a reverse biased zener diode including an N conductivity type cathode formed in a P conductivity type base region which forms the anode of the zener diode in an N substrate region and an NPN transistor including an N conductivity type emitter region formed in said P conductivity type base region which is formed in said N conductivity type substrate region as a collector, said zener diode anode being connected to said NPN base, the improvement being said zener diode comprising:

said N conductivity type cathode region formed in the surface of said P conductivity type region; and

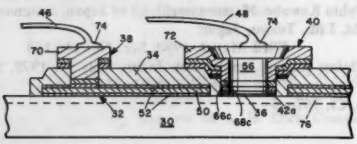
a buried P conductivity type anode region having a greater impurity concentration than said P conductivity type base region extending from the bottom of said N conductivity type cathode region into said P conductivity type base region to form a buried zener diode.

4,319,258

SCHOTTKY BARRIER PHOTOVOLTAIC DETECTOR

Gary L. Harnagel, La Verne; Gerry T. Laga, Placentia; Joseph M. Harrison, San Dimas, all of Calif., and Victor A. Twaddell, Fairport, N.Y., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Mar. 7, 1980, Ser. No. 128,325
Int. Cl.[3] H01L *29/48*
U.S. Cl. 357—15 **6 Claims**



1. A Schottky barrier photovoltaic detector comprising:

a cadmium sulfide substrate having upper and lower surfaces;

an infrared shield structure overlying the upper surface of the substrate, including a layer of gold sandwiched between two layers of titanium, the shield structure being delineated to provide a first central window therein;

in insulating layer covering the infrared shield structure and having a second central window and a side window therein, the second central window being coincident with and slightly smaller than the first central window;

a Schottky barrier metallization layer positioned within the second central window and completely covering the portion of the substrate which is located therein, the Schottky barrier metallization layer being sufficiently thin so that it is substantially transparent to ultraviolet and infrared radiation;

means positioned above the upper surface of the substrate for providing a barrier contact extending through the second central window and leaving a major portion of the Schottky barrier metallization layer exposed; and

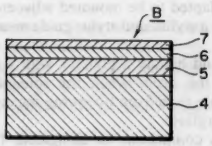
means positioned above the upper surface of the substrate for providing an ohmic contact extending through the side window.

4,319,259

ELECTROLUMINESCENT ELEMENT

Masaaki Ohsima, Yokohama, and Isamu Akasaki, machida, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 22, 1980, Ser. No. 142,712
Claims priority, application Japan, Apr. 23, 1979, 54/50124
Int. Cl.[3] H01L *27/14*
U.S. Cl. 357—17 **4 Claims**



1. An electroluminescent element comprising an n-type GaAs substrate, a GaAsP grading layer and an n-type GaAsP constant layer both of which are grown on said substrate epitaxially in this order, and an In-containing GaAsP layer formed on top of said constant layer, the In-doped GaAsP layer being made of a crystal having a composition of the formula,

$$In_xGa_{1-x}As_yP_{1-y}$$

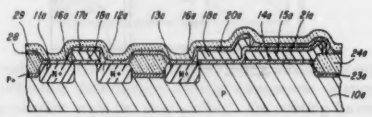
where $0.002 \leqq x \leqq 0.08$ and $0.2 \leqq y \leqq 0.4$.

4,319,260

MULTILEVEL INTERCONNECT SYSTEM FOR HIGH DENSITY SILICON GATE FIELD EFFECT TRANSISTORS

Al F. Tasch, Jr., Richardson, Tex., and Horng-Sen Fu, Sunnyvale, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 5, 1979, Ser. No. 72,803
Int. Cl.[3] H01L *29/167, 29/78*
U.S. Cl. 357—23 **4 Claims**



1. A semiconductor device comprising:

a semiconductor body of P type conductivity; a pair of N type regions in said body and adjacent to the surface of said body, said regions being doped with slow diffusion impurity; an insulating layer upon said surface, disposed

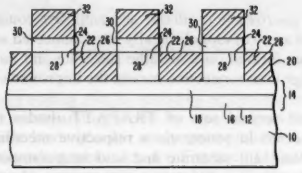
between and partially overlapping said regions; a conductive member upon said first layer partially overlapping said regions; and a multilevel interconnect system insulating layer of arsenic doped glass upon a layer of silicon dioxide upon said conductive member and said regions wherein said layer of silicon dioxide acts as a barrier to diffusion of arsenic from said arsenic glass.

4,319,261

SELF-ALIGNED, FIELD AIDING DOUBLE POLYSILICON CCD ELECTRODE STRUCTURE

Francis J. Kub, Pasadena, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 8, 1980, Ser. No. 147,802
Int. Cl.[3] H01L *29/78, 29/04;* G11C *19/28*
U.S. Cl. 357—24 **11 Claims**



1. A charge coupled device having a double layer electrode structure comprising:

a substrate body of semiconductor material having a substantially flat top surface;

a first dielectric layer lying on said top surface of said substrate body and at least covering an area which defines a charge transfer channel of said substrate body through which charge may be propagated;

a first layer of polycrystalline material lying over said first dielectric layer and covering at least said channel portion thereof, said first polycrystalline layer comprising doped and undoped regions alternating across said channel portion laterally along the path of charge transfer, each region extending at least the length of said channel portion transverse to the charge transfer path and extending from said first dielectric layer to the top surface of said first polycrystalline layer to form corresponding alternating doped and undoped surface areas across said channel portions of said top surface thereof;

a plurality of first sections of a second dielectric layer, each first section lying on said top surface of said first polycrystalline layer substantially aligned over each of said undoped surface areas, said doped surface areas of said first polycrystalline layer remaining substantially exposed;

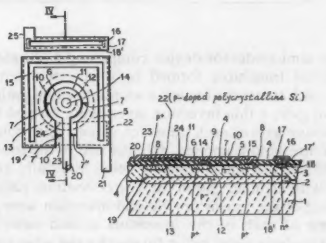
a plurality of second sections of a second layer of doped polycrystalline material, each second section lying over and substantially aligned with each of said first sections of said second dielectric layer, whereby the doped regions of said first layer of polycrystalline material and said second sections of the second doped polycrystalline layer constitute double layer electrodes of the charge coupled device which are substantially aligned to eliminate overlap and may be electrically insulated from each other with the first section of the second dielectric layer.

4,319,262

INTEGRATED-CIRCUIT STRUCTURE INCLUDING LATERAL PNP TRANSISTOR WITH POLYSILICON LAYER BRIDGING GAP IN COLLECTOR FIELD RELIEF ELECTRODE

Franco Bertotti, Milan; Vincenzo Prestileo, Arese, and Mario Foroni, Valeggio sul Mincio, all of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Agrate-Brianza, Italy

Filed Feb. 12, 1980, Ser. No. 120,923
Claims priority, application Italy, Feb. 13, 1979, 20139 A/79
Int. Cl.[3] H01L *29/72*
U.S. Cl. 357—35 **6 Claims**



1. A lateral transistor forming part of an integrated semiconductor structure which includes a monocrystalline silicon substrate of p-type conductivity, an epitaxial silicon layer of n-type conductivity on said substrate and an oxide layer overlying said epitaxial layer, comprising:

a p-doped inner diffusion zone in said epitaxial layer forming an emitter region immediately below said oxide layer;

a p-doped outer diffusion zone in said epitaxial layer forming a collector region in the form of a closed ring spacedly surrounding said emitter region immediately below said oxide layer, said emitter and collector regions being separated by a base region of substantially constant width forming part of said epitaxial layer;

a first conductive patch on said oxide layer forming an emitter electrode overlying said inner diffusion zone in conductive contact therewith and therebeyond above an adjoining inner peripheral area of said base region;

a second conductive patch on said oxide layer forming a collector electrode overlying said outer diffusion zone in conductive contact therewith and therebeyond above an adjoining outer peripheral area of said base region, said second patch concentrically surrounding said first patch except for a peripheral gap, said patches having confronting boundaries spaced apart by a substantially uniform distance significantly smaller then the width of said base region;

a third conductive patch on said oxide layer forming a base electrode overlying said epitaxial layer in conductive contact therewith at a location outside said second patch;

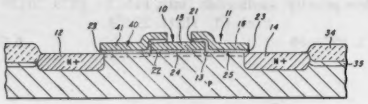
conductor means extending from said patches to an external circuit, said conductor means including a strip of conductor material extending from said first patch on said oxide layer through said gap with a separation from the gap edges substantially corresponding to the distance between said confronting boundaries; and

a conductive stratum embedded in said oxide layer and bridging said gap while approaching the periphery of said first patch with a spacing therefrom substantially corresponding to the distance between said confronting boundaries, said stratum being in conductive contact with said second patch on opposite sides of said gap.

4,319,263
DOUBLE LEVEL POLYSILICON SERIES TRANSISTOR DEVICES

G. R. Mohan Rao, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 907,234, May 18, 1978, Pat. No. 4,213,139. This application Dec. 10, 1979, Ser. No. 102,301
Int. Cl.³ H01L 27/02
U.S. Cl. 357—41 10 Claims

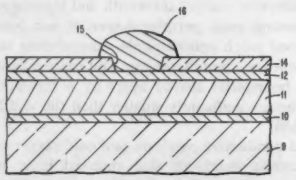


1. A semiconductor device comprising a plurality of series-connected transistors formed in a face of a semiconductor body, each transistor having a source-to-drain path and a conductive gate, a thin inversion layer being formed beneath the conductive gate of each transistor when a gate voltage greater than a threshold is applied, an inner end of the source-to-drain path of each of the transistors being integrally connected in series with an inner end of the source-to-drain path of an adjacent one of the transistors via said inversion layer, the source or drain of each of the transistors at said inner end of the source-to-drain paths being formed by the edge of said inversion layer beneath the gate of said adjacent one of the transistors, the gate of at least one of the transistors being adjacent to and partially overlying the gate of an adjacent one of the transistors but insulated therefrom by an insulating layer, a pair of heavily-doped regions in the face in the semiconductor body at outer ends of the source-to-drain paths of two of the transistors forming sources or drains adjacent edges of said conductive gates, there being no heavily-doped source or drain region in the face of the semiconductor body between adjacent ones of transistors.

4,319,264
NICKEL-GOLD-NICKEL CONDUCTORS FOR SOLID STATE DEVICES

Amitava Gangulee, Croton-on-Hudson; Paul S. Ho, Chappaqua; James K. Howard, Fishkill, and Robert J. Miller, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1979, Ser. No. 103,970
Int. Cl.³ H01L 23/48, 29/46, 29/54
U.S. Cl. 357—71 9 Claims



1. A conductor line for a solid state circuit supported by a substrate comprising

a first layer of nickel deposited upon said substrate as the base of said conductor line, an intermediate layer of gold deposited upon said first layer, and

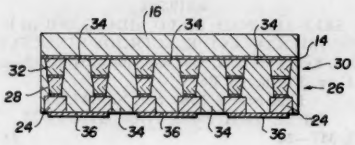
a third layer of nickel deposited upon said layer of gold, said first layer of nickel and said third layer of nickel being within the range from on the order of 10×10^{-9} to on the order of 100×10^{-9} meters thick and said gold layer being on the order of micrometers wide and within the range from on the order of 100×10^{-9} to on the order of 2000×10^{-9} thick, for a conductor line having a width for said thickenesses adapted for carrying current densities reaching to on the order of the mid-10^6 amperes/cm^2 range,

whereby the electromigration lifetime of such a conductor is lengthened by the interaction of the nickel and gold atoms in the structure.

4,319,265
MONOLITHICALLY INTERCONNECTED SERIES-PARALLEL AVALANCHE DIODES

Arye Rosen, Cherry Hill, and Jerome B. Klatskin, Cranbury, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 6, 1979, Ser. No. 101,405
Int. Cl.³ H01L 23/32, 29/90, 29/06
U.S. Cl. 357—76 6 Claims



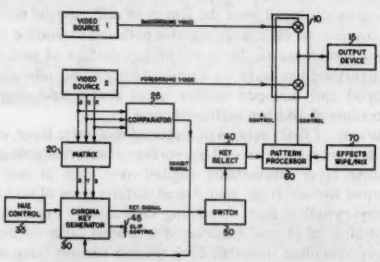
1. In a microwave oscillator and amplifier comprised of an integrated array of monolithically interconnected semiconductor devices formed on a metallic substrate and having metallized bridge interconnection means, the improvement comprising:

first and second sets of TRAPATT diodes individually connected in series, via a respective metallic interface, between said substrate and said interconnection means, said interconnection means comprising a plurality of metallized air bridges connecting a predetermined number of said series connected diodes in parallel, whereby the series of diodes serves to raise the resistance of the diode network for peak power applications.

4,319,266
CHROMA KEYING SYSTEM

Richard S. Bannister, Grass Valley, Calif., assignor to The Grass Valley Group, Inc., Grass Valley, Calif.

Continuation of Ser. No. 71,956, Sep. 4, 1979. This application Dec. 19, 1980, Ser. No. 217,973
Int. Cl.³ H04N 9/535
U.S. Cl. 358—22 12 Claims



1. A system for switching video signals, comprising

a first video signal source providing a first video signal having a plurality of color components present in various proportions and representing a first visual image,

a second video signal source providing a second video signal representing a second visual image,

means responsive to a selected one of the color components

in said first video signal for switching between said first and second signal sources to produce a composite video signal containing image information from both of said sources, and

means coupled to said first source and to said switching means for comparing the color components of said first video signals and inhibiting switching by said switching means when the proportions of said color components are substantially equal.

4,319,267

PICTURE CODING AND/OR DECODING EQUIPMENT

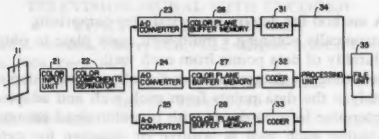
Eiji Mitsuya, Yokohama; Shinichi Murakami; Katsumi Mori, both of Yokosuka; Tomio Kishimoto, and Takahiko Kamae, both of Yokosuka, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Jan. 30, 1980, Ser. No. 116,713

Claims priority, application Japan, Feb. 16, 1979, 54-17072; Feb. 16, 1979, 54-17073; Feb. 16, 1979, 54-17074; Feb. 16, 1979, 54-17075; Feb. 16, 1979, 54-17076; Feb. 16, 1979, 54-17077

Int. Cl.³ H04N *1/46, 1/41*

U.S. Cl. 358—75 **28 Claims**



1. A picture coding and/or decoding equipment comprising:

color picture separating means for separating a color picture into three kinds of color component pictures;

first block coding means for dividing one of the three color component pictures into a plurality of blocks and encoding them so that at least one of the blocks has a gray level code representing at least one typical gray level component of the block and that at least one of the blocks has a plurality of gray level codes and a resolution code representing their distribution in the block; said first block coding means comprising means for deciding whether or not a change in the gray level of pels in each block is below a predetermined value; means for encoding the block so that it has one typical gray level code alone or a plurality of gray level codes and a resolution code representing their distributions in the block in dependence on whether the decision result is below or above a predetermined value; and means for encoding, for each block, mode information for distinguishing between the coding with the gray level code alone and the coding including the resolution code; and

second and third block coding means for dividing the other two color component pictures into pluralities of blocks respectively and encoding them so that each of the blocks has a gray level code representing at least one typical gray level component.

4,319,268

REPRODUCTION PICTURE SHARPNESS EMPHASIZING METHOD

Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Jun. 30, 1980, Ser. No. 164,556

Claims priority, application Japan, Jul. 2, 1979, 54-82571

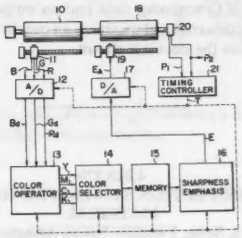
Int. Cl.³ H04N *1/46*

U.S. Cl. 358—75 **8 Claims**

1. A sharpness emphasizing method of picture reproduction for use in a picture reproducing machine wherein an original picture is scanned to pick up a picture signal which is separated into color separation picture element signals of primary colors, and wherein a reproduction picture is produced by using the color separation picture element signal, comprising the steps of:

(a) picking up a main picture element signal whose sharpness is to be emphasized, and supplemental picture element signals positioned around the main picture element signal;

(b) weighting the supplemental picture element signals with factors in such a manner that the supplemental picture



element signals positioned in the same distance away from the main picture element signal may be weighted with the same factor;

(c) averaging the supplemental picture element signals weighted to obtain a mean value signal; and

(d) emphasizing the main picture element signal according to the mean value signal.

4,319,269

EXTERNAL APPEARANCE INSPECTING SYSTEM

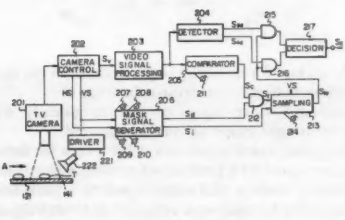
Toshihiro Kajiura, Osaka; Norio Oita, Kobe; Masahiro Mori, Osaka, and Yuichi Fukui, Settsu, all of Japan, assignors to Kanebo Limited, Tokyo, Japan

Filed Aug. 30, 1979, Ser. No. 71,354

Claims priority, application Japan, Nov. 24, 1978, 53-145728

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—106 **9 Claims**



1. An external appearance inspecting system comprising:

a TV camera for forming a TV image scope oriented to a flow of objects to be inspected on a conveyor;

a camera control unit for producing a video signal of the TV image scope;

a video signal processing circuit for processing the video signal;

an appearance detector which receives the processed video signal and extracts portions indicating visible features of the object from the processed video signal;

a decision circuit for discriminating whether or not the extracted video signal is created by defects contained in the object;

a level comparator for differentiating a video signal indicating the image of the object from a video signal indicating the image of the background;

an areal mask signal generator which produces both a first area signal and a second area signal, based on horizontal and vertical synchronizing signals and the output from the level comparator, the first area signal defining a detection

area and the second area signal defining an inspection area, and the generator further determines a $(N+K)_{th}$ ($N=1, 2, 3 \ldots$, $K=1, 2, 3 \ldots$) scanning field of the inspection area, in case the image of the object was detected in the detection area at a N_{th} scanning field, the $(N+K)_{th}$ scanning field being adapted to inspect the image of the object entirely, and;

an AND gate means which receives both a signal indicating the $(N+K)_{th}$ scanning field and an output from the appearance detector and produces an output therefrom to be supplied to the decision circuit.

4,319,270

SURFACE INSPECTION SYSTEM FOR HOT RADIANT MATERIAL

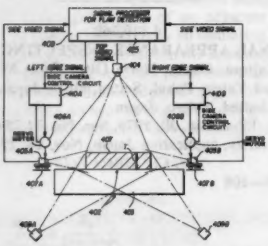
Nobuo Kimura, Kobe; Yasuhide Nakai, Amagasaki, and Yoshiro Nishimoto, Higashiosaka, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Jan. 9, 1980, Ser. No. 110,616

Claims priority, application Japan, Jan. 12, 1979, 54-00233[U]; Jan. 12, 1979, 54-002484; Jan. 12, 1979, 54-002485; Aug. 30, 1979, 54-111982

Int. Cl.³ H04N 7/18

U.S. Cl. 358—106 **5 Claims**



1. A method for detecting imperfections on the surface of a hot radiant material, comprising the steps of:

obtaining a video signal by electro-optically scanning a radiant light image of said hot material;

feeding said video signal to a delay means for delaying said video signal for a predetermined time interval and simultaneously feeding said video signal to a peak hold circuit means for holding peak values of said video signal derived by dividing said video signal in a scanning direction into a plurality of picture elements by a plurality of picture splitting pulses;

obtaining for each picture element a normal level signal sequentially by averaging peak values of a number of picture elements in adjoining areas;

comparing said peak values of said video signal obtained by passing said video signal through said peak hold circuit means with a current normal level signal obtained in a previous operation;

slide-averaging fractional signals of said peak values of said video signal wherein each of said fractional signals having a difference from said current normal level signal in excess of a preset value is eliminated and replaced by a previously obtained fractional signal in said slide-averaging process; and

comparing the delayed video signal from said delay means with said normal level signal to discriminate a surface imperfection according to the difference between said delayed video signal and said normal level signal.

4,319,271

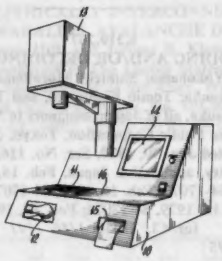
AUTOMATED PLATE READER

William M. Hurni, North Wales, and William J. McAleer, Ambler, both of Pa., assignors to Merck & Co. Inc., Rahway, N.J.

Filed Dec. 18, 1978, Ser. No. 970,722

Int. Cl.³ H04N 7/18

U.S. Cl. 358—107 **4 Claims**



1. A method for determining viral titer comprising

electronically scanning a multi-well assay plate to obtain a plurality of data points from each well,

transmitting the data points to a digital computer adapted to analyze the data points from each well and adapted to determine in accordance with predetermined parameters whether each well is positive or negative for cytopathologic effect, and

calculating the viral titer from the positive or negative determination for each well.

4,319,272

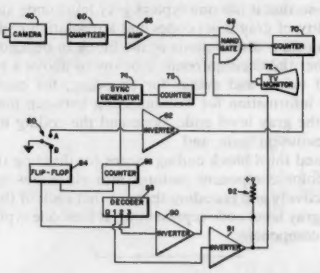
ELECTRONIC POSITIONING METHOD AND APPARATUS

James W. Henry, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,810

Int. Cl.³ H04N 7/18

U.S. Cl. 358—107 **13 Claims**



1. Method of determining the deviation of the image of a supported object from a predetermined position on a kinescope screen, said image being bright with respect to the rest of the picture area comprising

(a) generating a video signal of at least a single frame duration which includes the bright image such that the complete area to be measured is encompassed,

(b) applying the electrical signal representing the bright image to a switching device, one input of which is supplied with a switching signal having a frequency of at least 10 times the line scan frequency of the video signal to divide the period of scanning represented by the bright image into a series of pulses, the duration of the pulse

series being controlled by the beginning and ending of the signal representing the bright image,

(c) electrically applying the output signal from said switching device to a digital counter, whereby the area of said bright image is measured in terms of number of pulses counted,

(d) forming at least one line of a X-Y coordinate system on the kinescope screen to establish a reference position by intensifying predetermined pulse counts of said switching signal to form said line,

(e) using said predetermined pulse counts to turn off or on the scan lines on one side of said coordinate line, and

(f) counting the dots to one side of said line, whereby the area of said side is determined in terms of dot count and the ratio of such dot count on one side of said line to the dot count for the entire bright image can be used to determine position of the bright image area with respect to said line.

4,319,273

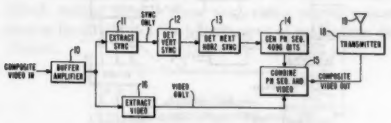
TELEVISION SIGNAL WITH ENCODED SYNCHRONIZING SIGNALS

Edward J. Nossem, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,511

Int. Cl.³ H04N *7/16*

U.S. Cl. 358—120 **12 Claims**



1. In a television system comprising:

transmitter means comprising first logic means for generating and transmitting a video signal whose synchronizing signals consist solely of encoded signals occurring only during a predetermined portion of the vertical blanking periods of said video signal and containing information from which both conventional vertical and horizontal synchronizing signals can be derived; and

receiver means comprising second logic means responsive to said encoded signals in said video signal to generate conventional vertical and horizontal synchronizing signals and to insert said generated conventional vertical and horizontal synchronizing pulses into said video signal in lieu of said encoded signals to form a composite video signal.

4,319,274

METHOD OF RECORDING IMAGE INFORMATION ON THE TARGET OF A SCAN CONVERTER TUBE

Ronald J. Geluk, Nootdorp, Netherlands, assignor to N.V. Optische Industrie De Oude Delft, Netherlands

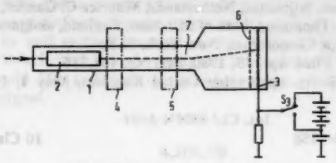
Filed Jun. 18, 1979, Ser. No. 49,341

Claims priority, application Netherlands, Jun. 23, 1978, 7806812

Int. Cl.³ H04N *5/02, 5/14*

U.S. Cl. 358—140 **8 Claims**

1. A method of recording and superimposing image information on the target of a scan converter tube in which the image information is supplied in the form of an electrical video signal by means whereof the electron beam projected from the cathode of the tube onto the target is modulated so as to form a charge image, the method comprising the step of operating



said scan converter tube alternatingly between a beam landing mode and a secondary emission mode.

4,319,275

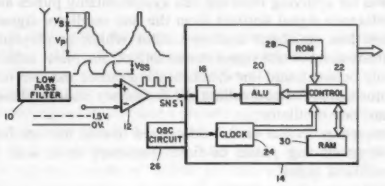
VERTICAL SYNCHRONIZATION DETECTION SYSTEM AND METHOD

Akio Tanaka, San Francisco, Calif., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Apr. 30, 1980, Ser. No. 145,153

Int. Cl.³ H04N *5/10*

U.S. Cl. 358—154 **16 Claims**



1. A system for detecting a vertical synchronization pulse in a composite synchronization signal in a video signal, including first signal processing means for separating said vertical synchronization pulse from said composite synchronization signal and said video signal, said system comprising:

first comparator means coupled to the output of said first signal processing means for receiving a vertical signal input from said signal processing means, said comparator means having a predetermined threshold signal level to produce an output pulse when said vertical signal input level exceeds said predetermined threshold signal level;

low level and high level counter means coupled to the output of said first comparator means for counting the time intervals said output pulse is low and high, respectively;

second comparator means coupled to said low level and high level counter means for comparing said measured low and high level counts with a predetermined range of low and high level counts and for comparing the combination of said low and high level counts with a predetermined range of low and high level count combinations for one period of said output pulse; and

signal generation means coupled to and responsive to said second comparator means for producing a vertical synchronization detection signal when said measured low and high level counts and said combination thereof are within said predetermined ranges of said low and high level counts and said combination thereof.

4,319,276
TELEVISION RECEIVER SYNCHRONIZING ARRANGEMENT

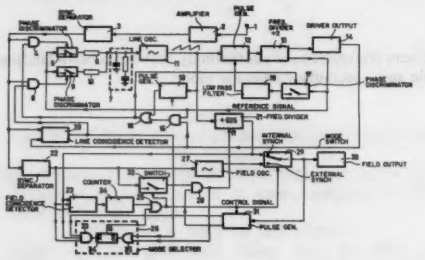
Adriaan Cense, Nijmegen, Netherlands; Maurice C. Gander, and Donald G. Thompson, both of Mitcham, England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,516

Claims priority, application United Kingdom, May 4, 1979, 15685/79

Int. Cl.³ H04N *5/04*

U.S. Cl. 358—158 **10 Claims**



1. A television receiver suitable for the reception of a television signal incorporating line and field synchronizing pulses, a plurality of fields constituting an image, the receiver including a synchronizing arrangement which comprises:

a line oscillator for generating in the synchronized condition thereof a signal having a frequency equal to the line frequency or to an integral multiple thereof,

a line oscillator control circuit,

means for applying received line synchronizing pulses and a reference signal derived from the line oscillator signal to said line oscillator control circuit which is adapted to produce a control signal depending on the phase relationship between said line synchronizing pulses and said reference signal for controlling the frequency and/or phase of said line oscillator,

a frequency divider circuit connected to said line oscillator for producing pulses of field frequency from said line oscillator signal,

a field comparison stage,

means for applying received field synchronizing pulses and pulses produced by said frequency divider circuit to said field comparison stage for comparing the phase of said received pulses with that of the divider pulses,

means for determining the time during which a given phase relationship does not exist in said comparison stage between the pulses compared therein,

means for applying received field synchronizing pulses to said frequency divider circuit for the resetting thereof,

a field deflection output stage,

a field synchronization control stage connected to said field deflection output stage, said field control stage being switchable between an external synchronization operating mode in which it is adapted to apply in operation the received field synchronization pulses or a signal derived therefrom to the field output stage and an internal synchronzation operating mode in which it is adapted to apply in operation the divider pulses to the field output stage, said field control stage being adapted to be switched from said external to said internal synchronization mode when the given phase relationship in said field comparison stage has existed for a predetermined period while said field control stage is adapted to be switched from said internal to said external synchronizaton mode when said given phase relationship has not existed for said predetermined period, a received field synchronizing pulse being then allowed to be applied to the frequency divider circuit for the resetting thereof, wherein said field control stage is also adapted to be switched from the internal to the external synchronization mode under the control of the line oscillator control circuit when the phase between the line synchronizing pulses and or a further reference signal also derived from the line oscillator signal departs from a given phase relationship.

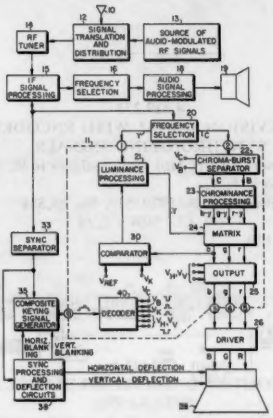
4,319,277
INSTITUTIONAL AUDIO-VISUAL SYSTEM INCLUDING A PLURAL OPERATING MODE TELEVISION RECEIVER

John E. Nicholson, Indianapolis, and Paul C. Wilmarth, Noblesville, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 2, 1980, Ser. No. 165,411

Int. Cl.³ H04N *5/68*

U.S. Cl. 358—165 **2 Claims**



1. An institutional television system including a television receiver and a source of a plurality of modulated RF carrier signals occupying respectively different spectrum channels, with at least one of said channels occupied by modulated RF carrier signals of a first type conveying television picture information with accompanying sound information and inclusive of a picture carrier modulated by composite video signals inclusive of a video sync component occurring during synchronizing intervals also including a blanking level representative of image brightness, and another of said channels occupied by modulated RF carrier signals of a second type conveying sound information to the exclusion of television picture information and inclusive of a picture carrier devoid of video signal modulation; said television receiver including:

adjustable input means, coupled to said source, for selectably rendering said television receiver responsive to a selected one of said channels and for developing a first output representative of the sound information conveyed by said selected channel and a second output representative of the video signal modulation, if any, of the picture carrier of said selected channel;

a sound reproducer;

means for rendering said sound reproducer responsive to said first output;

an image display device;

video signal processing means similarly energized for each channel selection condition of said adjustable input means and having an input responsive to said second output of said adjustable input means and an output coupled to said image display device for controlling the light output thereof;

a sync separator responsive to said second output of said adjustable input means for developing a separated sync

component only when the selected channel is occupied by modulated RF carrier signals of said first type; and

means for controlling the operation of said video signal processing means in accordance with the output of said sync separator such that (1) the light output of said image display device is controlled in accordance with said video signal modulation when the output of said sync separator indicates that the selected channel is occupied by modulated RF carrier signals of said first type, and (2) the light output of said image display device is inhibited when the output of said sync separator indicates that the selected channel is occupied by modulated RF carrier signals of said second type; wherein said controlling means comprises:

means for deriving periodic keying signals from said video sync component of said composite video signal such that said keying signals are interrupted in the absence of said video sync component;

keyed control means normally operative in response to said keying signals, for providing an output signal normally corresponding to an image brightness control signal;

means for coupling said output signal of said keyed control means to said video signal processing means for normally controlling the blanking level of video signals processed thereby and accordingly controlling the brightness of an image reproduced by said image display device; and wherein

said keyed control means is disabled when said keying signals are interrupted in the absence of said video sync component such that said output signal of said keyed control means exhibits a magnitude and sense sufficient to blank output signals from said video signal processing means for inhibiting the light output of said image display device.

4,319,278
VIDEO SWITCH CIRCUIT

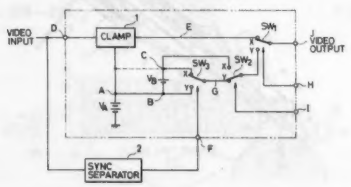
Tetsuo Shimizu, Tokyo, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,346

Claims priority, application Japan, Jun. 29, 1979, 54-81402

Int. Cl.³ H04N *5/22, 5/04*

U.S. Cl. 358—181 **3 Claims**



1. A video switch circuit comprising:

a clamping circuit for clamping one of the pedestal level of a composite video signal and the synchronization peak level of a synchronizing signal contained within said composite video signal to a predetermined clamp potential;

a first video switch having a first contact and a second contact coupled to a voltage source, the potential difference between said first and second contacts being equal to the potential difference between said pedestal level and said synchronization peak level, one of said first and second contacts being coupled to a voltage source having a potential of said clamp potential, and a first armature contact switched between said first and second contacts in synchronization with said synchronizing signal constituted within said composite video signal;

a second video switch having a third contact coupled to said first contact and a fourth contact coupled to said first armature contact of said first video switch, and a second armature contact switchable between said third and fourth contacts in response to a first external binary signal; and

a third video switch having a fifth contact coupled to an output of said clamping circuit and a sixth contact coupled to said second armature contact of said second video switch, and a third armature contact switchable between said fifth and sixth contacts by a second external binary signal.

4,319,279
TELEVISION IMAGING PANEL

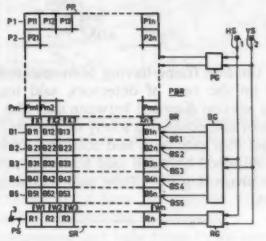
Franciscus H. M. Bergen; Marnix G. Collet, and Leendert J. van de Polder, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 29, 1980, Ser. No. 154,562

Claims priority, application Netherlands, Jun. 14, 1979, 7904654

Int. Cl.³ H04N *3/14*

U.S. Cl. 358—213 **7 Claims**



1. A television imaging panel comprising: information-recording and storage elements respectively arranged in rows and columns, a control circuit for transferring row after row the information to outputs of the rows of elements, an output of said imaging panel carrying a picture signal which corresponds with a picture which is assembled from a first and a second field in an interlaced manner, said panel also comprising a buffer register inputs of which are connectable in a first instance to the outputs of one of the element rows and in a second instance connectable one after the other to the outputs of several element rows and whose outputs are coupled to the panel output, a control circuit, said buffer register being connected to said control circuit for shifting in each first field period of the interlaced picture each recorded information of an element row directly and fully, and for shifting in each second field period of the interlaced picture half of each recorded information of an element row, the other half being retained in the said buffer register for combining it to half of the information to be shifted of the next row of elements.

4,319,280
APPARATUS FOR CONVERTING CINEMATOGRAPHIC PICTURES INTO VIDEO SIGNALS

Jan Roos; Klaas Compaan, and Adrianus C. van Kasteren, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 25, 1980, Ser. No. 124,403

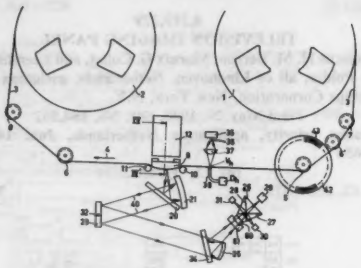
Claims priority, application Netherlands, Feb. 26, 1979, 7901476

Int. Cl.³ H04N *3/36, 9/11*

U.S. Cl. 358—214 **12 Claims**

1. An apparatus for converting cinematographic pictures into video signals, which apparatus comprises a film gate, transport means for moving a film through the film gate and opto-electronic means for scanning a film frame, which is located in the film gate, with a light beam and for converting the light beam which has been modulated by the film frame into electronic signals, characterized in that there is provided

an illumination system for simultaneously illuminating the entire film gate, and that the said opto-electronic means comprises a scanning mirror, which is pivotable about an axis which is effectively transverse to the direction of film transport, at least one row of radiation sensitive detectors, the number of detectors in each row being equal to the number of points to be scanned of a line of the film frame, and an optical imaging system which includes said scanning mirror for imaging a line of the film frame having been selected by the scanning mirror on the row of detectors, said imaging system having a first portion disposed between said film gate and said scanning mirror and consisting solely of mirrors for projecting light from said film gate onto said scanning mirror and a second portion disposed between said scanning mirror and said detectors for projecting light from said scanning mirror onto said detectors.



4,319,281

TELEVISION IMAGE RECORDING APPARATUS

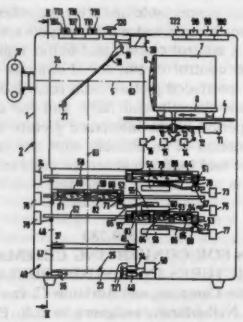
Arthur Gall, and Paul Marhoff, both of Erlangen-Bruck, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 29, 1980, Ser. No. 182,573

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1979, 2936228

Int. Cl.³ H04N *5/84*

U.S. Cl. 358—244 **11 Claims**



1. Image recording apparatus comprising a housing, a lens assembly in said housing comprising a plurality of lenses arranged adjacently and a separate shutter for each of said lenses, a photographic exposure position, a television monitor having a fluorescent screen for emitting light rays along an optical path of rays, film supply and collector magazine means, a transport device for the conveyance of individual film sheets from said magazine means into said photographic exposure position, and from the photographic exposure position into the magazine means, characterized in said lens assembly having respective shiftable lens supports (**51, 52, 53**) supporting respective sets of said lenses (**79** through **87**), said lens supports (**51, 52, 53**) each having an inactive position in which the associated set of lenses is offset from said optical path of rays and having an active position in which the associated set of lenses is operatively interposed in said optical path of rays, lens positioning drives (**54, 55, 56**) each connected with one of said lens supports (**51, 52, 53**) for selectively shifting each of said lens supports from the inactive position to said active position, a selector mechanism (**98, 99, 100**) for selecting a desired film subdivision and coupled with the lens positioning drives (**54, 55, 56**) for controlling the selective actuation of said positioning drives to effect positioning of the set of lenses corresponding to the selected film subdivision in said active position, and an additional positioning drive (**9** through **16**) operative for adjusting the distance of the television monitor (**7**) relative to the photographic exposure position (**25**), and responsive to actuation of said selector mechanism (**98, 99, 100**) for adjusting the distance between said television monitor (**7**) and the photographic exposure position (**25**) in accordance with the film subdivision selected by said selector mechanism.

4,319,282

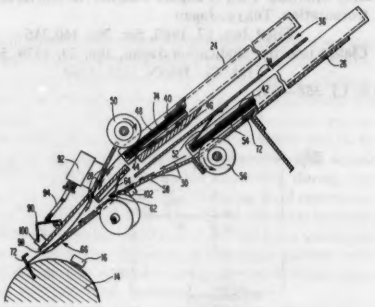
FACSIMILE METHOD AND APPARATUS WITH SHEET FEEDING

G. William Hartman, Jr., Longwood, and Ronald F. Schley, Ocoee, both of Fla., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 11, 1980, Ser. No. 120,489

Int. Cl.³ H06N *1/08*

U.S. Cl. 358—286 **13 Claims**



1. Facsimile apparatus for transmitting and receiving signals representing dark/light variations on a document comprising:

scanning means;

document storage means for storing a plurality of document sheets to be scanned for dark/light variations for generating transmitted signals;

copy medium storage means for storing a plurality of copy medium sheets for recording dark/light variations represented by received signals;

a document feed path from said storage means to said scanning means;

a copy medium feed path from said copy medium storage means to said scanning means; and

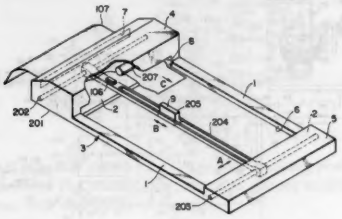
an additional sheet feed path;

said copy medium feed path, said document feed path, and said additional sheet feed path merging so as to form a single feed path at said scanning means.

4,319,283
PORTABLE COPYING MACHINE

Takashi Ozawa; Mutsuo Takenouchi; Souichi Sekimoto, and Yoshiki Kikuchi, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1980, Ser. No. 138,960
Claims priority, application Japan, Apr. 17, 1979, 54-45979
Int. Cl.³ H04N 1/10, 1/22
U.S. Cl. 358—286 7 Claims

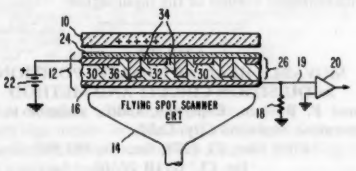


1. A copying machine comprising: a thermal recording head for recording on a heat-sensitive sheet; a light receiving element for producing an image signal in response to scanning a document, said thermal recording head operating in response to said image signal to record data corresponding to said original document on said heat-sensitive sheet; a moving element, means for moving said moving element in a main scanning direction, means for moving said light receiving element on said moving element in an auxiliary scanning direction, said thermal head being stationarily mounted on said moving element; and means for moving said heat-sensitive sheet in correspondence with movement of said light receiving element.

4,319,284
REPETITIVE READOUT OF ELECTROSTATICALLY STORED INFORMATION

Helmut G. Kiess, Niedersteinmaur, and Bruno K. Binggeli, Rueti, both of Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed Oct. 12, 1979, Ser. No. 84,413
Int. Cl.³ H04N 1/02
U.S. Cl. 358—294 4 Claims



1. In an apparatus for continuously reading out the graphic information represented by a charge pattern on a dielectric film,

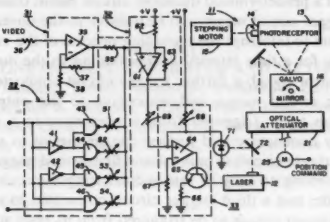
an integrated circuit having an array of field effect devices each comprising source and drain regions of one conductivity type separated by a channel region of the opposite conductivity type at one face of said integrated circuit which is to be positioned adjacent said dielectric film, and having an array of p-n junction photodiodes each in serial circuit with a respective drain electrode and located between the opposite face of said integrated circuit and said respective drain electrode, and having a transparent electrode on said opposite face of the integrated circuit,

a load impedance connected to said transparent electrode, and means to supply an operating bias voltage across said field effect devices and respective photodiodes and said load impedance.

4,319,285
EXPOSURE CONTROL FOR SELECTIVE SPEED XEROGRAPHIC PRINTING AND THE LIKE

Timothy M. Minerd, Richardson, Tex., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 672,706, Apr. 1, 1976, Pat. No. 4,197,560.
This application Mar. 19, 1979, Ser. No. 21,527
Int. Cl.³ H04N 1/22, 1/40, 5/80
U.S. Cl. 358—300 3 Claims



1. A method for normalizing the radiant energy imparted to a photoresponsive, exposure time sensitive recording medium while exposing said recording medium, at any selected one of a plurality of different printing rates, to a video modulated light beam emitted by a laser in response to a video input signal, said method comprising the steps of

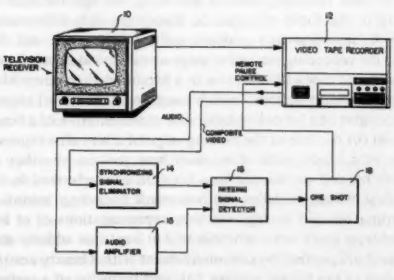
optically attenuating said light beam by an amount which is adjusted as a function of the printing rate selected to at least coarsely normalize the radiant energy imparted to said recording medium, and

electrically attenuating said video input signal by an amount which is adjusted as a function of the printing rate selected to hold the radiant energy imparted to said recording medium squarely within a predetermined, normalized range.

4,319,286
SYSTEM FOR DETECTING FADES IN TELEVISION SIGNALS TO DELETE COMMERCIALS FROM RECORDED TELEVISION BROADCASTS

Aran Hanpachern, Monterey Park, Calif., assignor to Muntz Electronics, Inc., Van Nuys, Calif.

Filed Jan. 7, 1980, Ser. No. 110,088
Int. Cl.³ H04N 5/78
U.S. Cl. 360—33 2 Claims



1. A system for interrupting the recording process of a video tape recorder in the recordation of a television signal derived from a television receiver, said television signal including

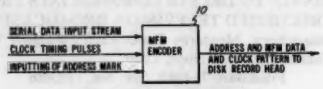
composite video signal components and audio signal components, said system including: a first circuit means adapted to be connected to the video tape recorder and responsive to the video signal components of the television signal for producing an output signal having a particular reference level when the video signal components fade to a predetermined low amplitude for a particular time interval; detector means connected to said first circuit means and responsive to the output signal therefrom for developing an output pulse when the output signal from said first circuit means drops to said predetermined reference signal for said particular time intervals; trigger circuit means connected to said detector circuit means and responsive to the output pulse therefrom for producing a control signal of a predetermined duration; circuit means connected to said trigger circuit means and responsive to the control signal therefrom to interrupt the recording process of the video tape recorder for a time interval corresponding to the duration of said control signal; a further trigger circuit connected to the detector circuit means and responsive to the output pulse therefrom to be triggered from a reset state to a set state; circuitry connecting said further trigger circuit to said first-named trigger circuit to prevent said first-named trigger circuit from resetting so long as said second trigger circuit is in its reset state; and a third trigger circuit connected to said first-named trigger circuit to be triggered from its reset state to its set state when the first-named trigger circuit is triggered to its set state, said third trigger circuit remaining in its set state for a predetermined time interval, and circuitry connecting said third trigger circuit to said second trigger circuit to prevent said second trigger circuit from being set so long as said third trigger circuit is in its set state.

4,319,287

MFM ADDRESS MARK ENCODING

Robert L. Swenson, Newark, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed May 24, 1978, Ser. No. 909,135
Int. Cl.[3] G11B *5/09*
U.S. Cl. 360—40 **1 Claim**


10
SERIAL DATA INPUT STREAM
CLOCK TIMING PULSES
INPUTTING OF ADDRESS MARK
MFM ENCODER
ADDRESS AND MFM DATA AND CLOCK PATTERN TO DISK RECORD HEAD

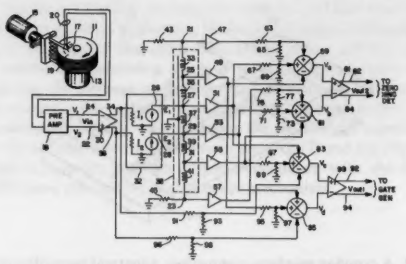
1. A data encoding system including storage member for storing in the form of magnetic transitions data information, clock information and address mark information, and first means for recording on said storage member said data information and said clock information in a Modified Frequency Modulation encoding scheme which encoding scheme (a) records at the center of a bit cell a data pulse representative of a binary one and (b) records at the leading edge of a bit cell a representation of a clock pulse if no data was written in either the present bit cell or the previous bit cell, characterized in that said first means includes address mark encoding means for recording on said storage member representations of at least one address mark byte, wherein said at least one address mark byte is characterized by commencement with a binary zero bit, inclusion of the binary pattern 101, and inclusion of a series of binary zero bits, and said address mark encoding means omits recording a clock pulse that conventionally would be recorded in Modified Frequency Modulation encoding due to the presence in said address mark byte of said series of binary zeros.

4,319,288

CURRENT INJECTION TAPPED DELAY LINE SPECTRAL SHAPING EQUALIZER AND DIFFERENTIATOR

Patrick S. K. Lee, Campbell, Calif., assignor to Sperry Corporation, New York, N.Y.

Filed Apr. 9, 1980, Ser. No. 138,614
Int. Cl.[3] G11B *5/09*
U.S. Cl. 360—46 **12 Claims**



1. A signal amplitude equalizing and differentiating circuit comprising:

a pair of differential input signal lines for receiving an input pulse-type signal,

a delay line having first and second ends each terminated in an impedance equal to the delay line characteristic impedance, said delay line having at least two intermediate taps symmetrically spaced between said first and second ends and electrically connected to said pair of differential input lines,

a voltage to current converter connected between the differential input signal lines and the two taps symmetrically spaced between the ends of the delay line for responding to the input signal to produce a differential current output for application to said symmetrically spaced taps, and

a plurality of signal summing means connected to receive selected inputs from said first and second delay line ends, from intermediate taps and from the input lines through gain multipliers, said summing means having outputs combined differentially to form a first output signal which is an amplitude equalized version of the input signal and a second output signal which is an amplitude equalized and differentiated version of the input signal.

4,319,289

MOVABLE HEAD AUTOMATIC POSITION ACQUISITION CIRCUIT AND METHOD

Raymond F. Ravizza, Cupertino, Calif., assignor to Ampex Corporation, Redwood City, Calif.

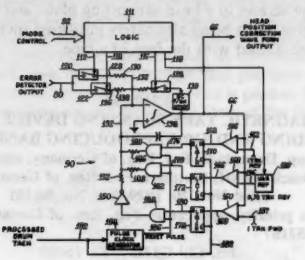
Filed Mar. 23, 1978, Ser. No. 889,995
Int. Cl.[2] G11B *21/10*
U.S. Cl. 360—77 **14 Claims**

1. In a recording and/or reproducing apparatus having transducing means operatively supported by rotation means for scanning a magnetic tape along a plurality of adjacent discrete tracks on the tape, the rotation means including movable means carrying the transducing means and effecting movement of the transducing means in opposite directions along a path generally transverse to the direction of said tracks in response to signals being applied thereto, a circuit for automatically acquiring the proper tracking position of the movable means carrying the transducing means, said circuit comprising:

means for resetting the position of said movable means periodically in accordance with the mode of operation of said apparatus;

means for detecting the absence of a periodic reset of the position of said movable means; and

means for effecting a reset of said movable means in response to the detection of the absence of a reset to thereby force



said movable means into the proper tracking position that positions the transducing means in proper scanning relation with the tracks of the tape.

4,319,290

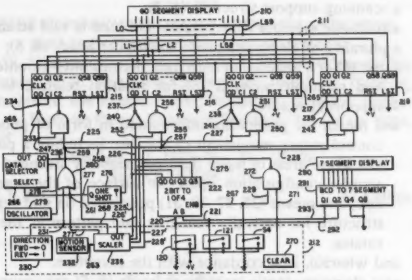
DICTATION RECORDING AND TRANSCRIBING METHOD AND APPARATUS INCLUDING DISPLAY FOR MULTIPLE RECORDING MEDIA

Fred C. Bolick, Jr., Atlanta; Theodore Titus, IV, Tucker, and Julius B. Bagley, Atlanta, all of Ga., assignors to Lanier Business Products, Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 970,357, Dec. 18, 1978, Pat. No. 4,247,876, and Ser. No. 27,990, Apr. 9, 1979. This application Sep. 24, 1979, Ser. No. 78,231

Int. Cl.³ G11B *15/68*

U.S. Cl. 360—92 **7 Claims**



1. In a dictation recording apparatus,

a cartridge means for releasably retaining a first recording medium at a first location and a second recording medium at a second location;

an indexing means for holding said cartridge and for selectively moving said cartridge from a first position wherein said first location is at a record/listen transducer to a second position wherein said second location is at said transducer, and for selectively returning said cartridge to said first position;

a transport for selectively moving said first recording medium when said cartridge is in said first position and alternately for selectively moving said second recording medium when said cartridge is at said second position;

signal means coupled to said transport for generating one of a plurality of parameter signals in response to each occurrence of a net amount of said first recording medium moving past said record/listen transducer when said cartridge is in said first position;

a storage means connected to said signal means for storing said parameter signals in response to said cartridge being moved from said first position to said second position by said indexing means; and

a display means responsive to said indexing means returning said cartridge to said first position for providing a visible display corresponding to said parameter signals stored in said storage means.

4,319,291

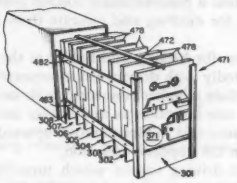
MAGNETIC TAPE APPARATUS AND METHOD

David S. Drubeck, 12043-½ Guerin St., Studio City, Calif. 91604, and Malcolm K. Morrett, 13720 E. Valley Blvd., Space #39, La Puente, Calif. 91746, assignors to David S. Drubeck, Studio City and Malcolm K. Morrett, La Puente, both of, Calif.

Filed Mar. 26, 1980, Ser. No. 134,292

Int. Cl.³ G11B *15/18, 15/44, 21/08*

U.S. Cl. 360—92 **16 Claims**



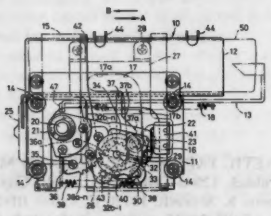
1. A method of preventing playback and tending to prevent pilfering of multi-track audio magnetic tape cassettes normally prerecorded and played back so that first and second audio tracks go along the tape in a first longitudinal direction and third and fourth audio tracks go along the tape in a second direction opposite from the first direction, the four tracks being parallel to each other, the tracks normally played back in first conventional playback devices by first, second, third and fourth track head pole pieces, the first and second track head pole pieces being simultaneously coupled to an audio output device and then the third and fourth track head pole pieces being simultaneously coupled to the audio output device so that the first and second track head pole pieces are initially coupled to the output device while the first and second tape tracks are moving in the first direction past the first and second track head pole pieces and the third and fourth track head pole pieces are subsequently coupled to the output device while the third and fourth tape tracks are moving in a second direction past the third and fourth track head pole pieces, the tape tracks normally played back in second conventional playback devices by first and second track head pole pieces simultaneously coupled to an audio output device while the first and second tape tracks are moving in a first direction past the first and second track head pole pieces with one face of the cassette in an upward position, the first and second track head pole pieces simultaneously coupled to the output device while the fourth and third tape tracks are moving in a second direction, opposite to the first direction, past the first and second track head pole pieces with said one face in a downward position, the improved method comprising recording the first and second audio tracks of a cassette in the second direction and recording the third and fourth audio tracks of the cassette in the first direction, whereby playback of the cassette by either of the first or second conventional playback devices results in an audio message of gibberish.

4,319,292

CASSETTE LOADING AND EJECTING APPARATUS

Hiroshi Katoh, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Dec. 27, 1979, Ser. No. 107,587
Claims priority, application Japan, Dec. 28, 1978, 53-163753
Int. Cl.[3] G11B *15/66, 15/24*
U.S. Cl. 360—96.5 7 Claims



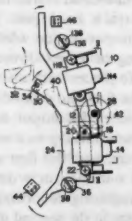
1. A cassette loading and ejection apparatus comprising:
a holder for receiving and holding a cassette inserted thereinto, said holder being moved downwards for placing said cassette into a predetermined loaded position and moved upwards for ejecting said cassette from the loaded position;
a mechanism for locking said holder at the loaded position interrelatedly with downward movement of said holder;
an intermediate member connected with said holder so as to move in one direction as said holder moves downwards and to cause said holder to move upwards due to motion thereof in the opposite direction;
a rotational driving source which turns responsive to an incoming ejection order when said holder is at the loaded position;
a lock releasing mechanism operated responsive to initial rotation of said rotational driving source for rendering said locking mechanism inoperative; and
a selective transmission mechanism for selectively transmitting rotation of said rotational driving source to said intermediate member after said lock releasing mechanism is operated, for the period of time during which said holder is required to be lifted, said transmission mechanism being in a released state when the cassette has been ejected.

4,319,293

HEAD ADJUSTING MECHANISM

Hideo Tomabechi, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1979, Ser. No. 92,363
Claims priority, application Japan, Nov. 16, 1978, 53-157810[U]
Int. Cl.[3] G11B *21/24, 21/12, 5/54*
U.S. Cl. 360—105 1 Claim



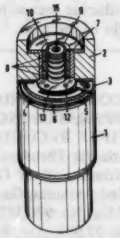
1. A head adjusting mechanism comprising a single leaf spring on which forward and reverse heads ride and by which the heads are upwardly biased, said leaf spring having upturned end portions on which head mounting plates each supporting the corresponding head thereon are placed, respectively, the head mounting plate having its end portions attached by screws to a head supporting plate, and the forward and reverse heads being alternately projected such that one of them is contacted with the face of a tape.

4,319,294

MAGNETIC TAPE SCANNING DEVICE FOR RECORDING AND/OR REPRODUCING BAND SIGNALS

Arno Repp, Darmstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 20, 1979, Ser. No. 96,161
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852167
Int. Cl.[3] G11B *5/52, 15/60*
U.S. Cl. 360—107 6 Claims



1. A scanning device for a magnetic tape equipment of the kind used for recording and/or reproducing broad band signals comprising
a scanning support structure (1, 2);
a rotatable member (5) rotatably mounted in said structure;
a plurality of electromagnetic transducer heads (4, 5);
a disc (6) of a material of high light permeability mounted on said rotatable member (5) for rotation relative to said support structure;
and means for generating information in form of pulses to control rotary movement of the disc including a pattern (32, 29) of areas of lesser light permeability arranged in an annular configuration upon the surface of the scanning disc, and means (25, 27; 30, 31) positioned on said support structure for optically scanning said pattern as the disc rotates;
and wherein, in accordance with the invention,
said electromagnetic transducer heads (4, 5) are secured to said disc carrying said pattern thereon, and said disc, with the transducer heads and the pattern thereon is removable as a unit from said support structure for repair or replacement from the support structure to maintain accurate alignment of the position of the transducer head with respect to said patterns on the disc.

4,319,295

CASSETTE TAPE RECORDER

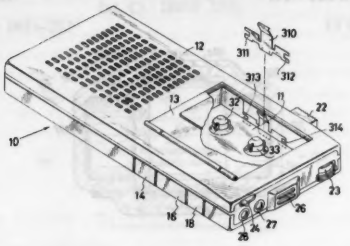
Kazuyasu Motoyama, and Toshikazu Kato, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1980, Ser. No. 124,515
Claims priority, application Japan, Mar. 2, 1979, 54-26468[U]
Int. Cl.[3] G11B *15/24*
U.S. Cl. 360—137 15 Claims

1. A cassette tape recorder comprising:
playback, recording, and stop button plates urged to their respective original positions by the biasing forces of first, second and third biasing means and slidably mounted in parallel on a base plate, said recording button plate being pressed independently after said playback button plate is

pressed or together with said playback button plate to engage the same so as to be locked to a recording position;

a lock mechanism including a seesaw lever mounted on said base plate within a plane across the sliding direction of said playback button plate, said seesaw lever having at one end portion thereof a lock means capable of engaging said playback button plate, and rocking in one direction to cause said lock means to engage said playback button plate when said playback button plate is pressed from its original position against the biasing force of the first biasing means, whereby said playback button plate is locked to a retreated position and the other end portion of said seesaw lever is moved to such a position that said other end portion can engage said stop button plate; and



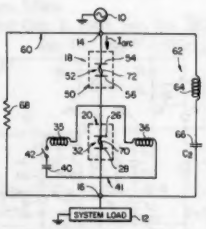
an ejecting plate detecting the difference between the displacement of said seesaw lever in the playback or recording mode and the displacement of said seesaw lever in the stop mode, and slidingly engaged with said stop button plate when said stop button plate is pressed against the biasing force of the third biasing means in the stop mode.

4,319,296

SERIES CONNECTED OSCILLATING TRANSVERSE FIELD INTERRUPTER AND METHOD

Clive W. Kimblin, Pittsburgh; Francis A. Holmes, Monroeville; Joachim V. R. Heberlein, Pittsburgh; Joseph G. Gorman, Murrysville, and Paul G. Slade, Pittsburgh, all of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Aug. 13, 1979, Ser. No. 65,928
Int. Cl.³ H02H *3/00*
U.S. Cl. 361—4 **17 Claims**



1. Current interruption means comprising:

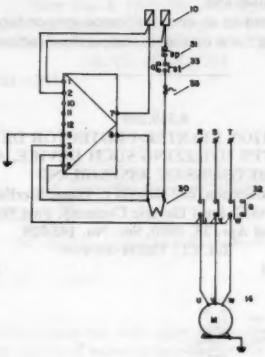
a first circuit which includes a plurality of vacuum arc interrupters connected in series, at least one of said series vacuum arc interrupters including oscillating field coil means for subjecting an arc in said at least one vacuum arc interrupter to an oscillating transverse magnetic field to modulate the arc voltage thereof, and a second circuit connected in parallel with said first circuit including all of said series connected interrupters, said second circuit including resonant circuit means for producing resonating current fluctuations, wherein voltage modulations in said first circuit cause said resonant circuit means to produce resonating current fluctuations in said first and second circuits which lead to rapid simultaneous arc extinction in said series vacuum arc interrupters.

4,319,297

LOW WINDING RESISTANCE PROTECTIVE DEVICE

Arie Lapsker, 19 Leah St., Haifa, Israel

Filed Feb. 27, 1980, Ser. No. 125,026
Int. Cl.³ H02H *7/08*
U.S. Cl. 361—23 **15 Claims**



1. A low winding resistance protective system for electrical motors comprising:

sensing means for coupling to at least one motor winding and for comparing the winding resistance of a motor when at rest to a predetermined threshold and for providing an output indication in response to exceedance of that threshold; and

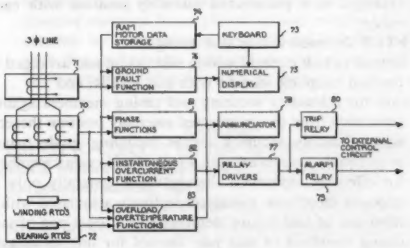
means for decoupling the at least one motor winding from the sensing means such that high voltages applied to the at least one motor windings during operation of the motor are prevented from reaching the sensing means.

4,319,298

MOTOR PROTECTION DEVICE

Richard K. Davis, and Ramesh N. Jani, both of Charlottesville, Va., assignors to General Electric Company, Salem, Va.

Filed Aug. 28, 1979, Ser. No. 70,296
Int. Cl.³ H02H *7/08*
U.S. Cl. 361—24 **13 Claims**



1. A motor protection device comprising:

means for receiving signals indicative of present motor operating conditions including at least signals representative of motor current and motor temperature;

means for entering field settable data wherein the field setta-

ble data comprises motor trip points and motor and system parameters;

resistance temperature detector means mounted to said motor for providing said motor temperature signals;

means for providing protective function characteristics based on said field settable data and said signals indicative of present motor operating conditions;

means for determining protective function values from said protective function characteristics;

a trip relay;

means for activating said trip relay when any of said motor trip points is exceeded by the corresponding protective function value; and,

means for detecting an open resistance temperature detector by checking for a maximum temperature indication.

4,319,299

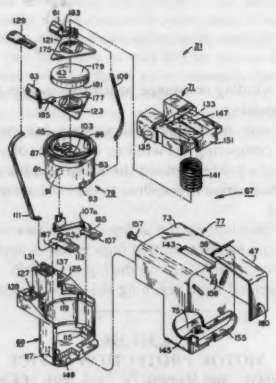
COMBINATION STARTER-PROTECTOR DEVICE, APPARATUS UTILIZING SUCH DEVICE, AND METHODS OF ASSEMBLING

Lee O. Woods, Morrison, and Donald L. Haag, Sterling, both of Ill., assignors to General Electric Company, Fort Wayne, Ind.

Filed Apr. 23, 1980, Ser. No. 143,029

Int. Cl.³ H02H 5/04

U.S. Cl. 361—24 **27 Claims**



2. A combination starter-protector device adapted for connection in circuit relation with a winding circuit of a dynamoelectric machine comprising:

a casing including a plurality of separable casing members arranged in a preselected assembly position with each other;

a PTCR disposed within said casing;

a bimetal switch element within said casing and arranged in thermal coupling relation with said PTCR; and

means for releasably securing said casing members against separation from the preselected assembly position thereof, said releasably securing means including guide means respectively associated with a pair of said casing members for effecting separation therebetween generally only in opposite directions, means respectively associated with a third one of said casing members and at least one of said casing members of said pair thereof for interlocking in engagement therebetween when said casing members are in the preselected assembly position thereof, and said third one casing member being arranged at least in part in overlaying relation with said casing member pair so as to obviate separation thereof in the opposite directions when said interlocking means is engaged.

4,319,300

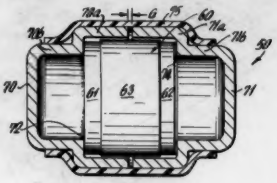
SURGE ARRESTER ASSEMBLY

John Napiorkowski, Massapequa Park, N.Y.; Raymond D. Jones, Cheam, England; Toshitaka Fukushima, Yokohama; Kazumi Koyama, Kanagawa; Kouji Ueno, Kawasaki; Tamio Miyamura, Kawasaki, and Yuichi Kawabata, Kawasaki, all of Japan, assignors to TII Industries, Inc., Lindenhurst, N.Y. and Fujitsu Limited, Kawasaki, Japan

Filed Nov. 13, 1979, Ser. No. 93,236

Int. Cl.³ H02H 9/06; G11C 7/00, 17/00

U.S. Cl. 361—119 **11 Claims**



1. In a gas tube arrester having two end electrodes and insulating sleeve wherein the improvement comprises back-up air gap means on the exterior of said arrester, said air gap means including electrically conductive end cap means in electrical and operative engagement with one of the gas tube electrodes and extending a predetermined distance over the sleeve toward the other electrode; means associated with said other electrode to form a back-up air gap with said end cap means; and wherein said end cap means includes shoulder means for abutting an end of said one electrode to establish said predetermined distance.

4,319,301

CIRCUITS FOR ELECTROMAGNET ENERGIZATION CONTROL

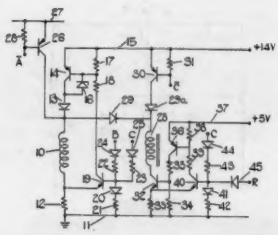
William F. Hill, Stafford, England, assignor to Lucas Industries, Limited, Birmingham, England

Filed Sep. 17, 1980, Ser. No. 187,882

Claims priority, application United Kingdom, Sep. 22, 1979, 32951/79

Int. Cl.³ H01H 47/32

U.S. Cl. 361—152 **4 Claims**



1. A circuit for the control of the energisation of an electromagnet, comprising a first switching element connecting the electromagnet between a relatively low voltage supply and a return rail, a second switching element connecting the electromagnet to a relatively high voltage supply for providing a high voltage across the electromagnet at switch-on, an inductor, means connecting the inductor to the low voltage supply so that current can flow therein, and diode means connecting the inductor to the electromagnet whereby when said first and second switch means are turned off, the current flowing in the

inductor is diverted through the electromagnet so as to oppose the current previously flowing in the latter.

4,319,302

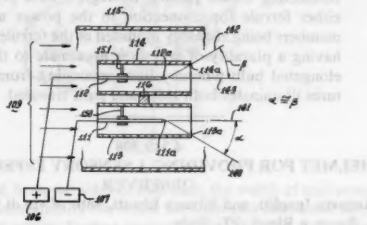
ANTISTATIC EQUIPMENT EMPLOYING POSITIVE AND NEGATIVE ION SOURCES

R. Edward Moulden, San Gabriel, Calif., assignor to Consan Pacific Incorporated, Whittier, Calif.

Continuation-in-part of Ser. No. 80,272, Oct. 1, 1979. This application Mar. 31, 1980, Ser. No. 135,544

Int. Cl.³ H05F 3/06

U.S. Cl. 361—213 15 Claims



1. In apparatus for generating and dispersing ions,

(a) first and second tip means aimed generally longitudinally forwardly, said first tip means spaced laterally from said second tip means,

(b) insulative structure including first and second generally parallel tubes respectively extending about said first and second tip means,

(c) circuit means to supply high voltage of relatively positive polarity to the first tip means and high voltage of relatively negative polarity to the second tip means,

(d) said tubes having forward ends which are spaced forwardly of said first and second tip means, and

(e) means supporting said tip means to extend within said tubes, at least one of the tip means adjusted spacially relative to the forward end of the tube within which it extends whereby the relative intensities of the positive and negative ions dispersed by the tip means have an adjustably selected relationship.

4,319,303

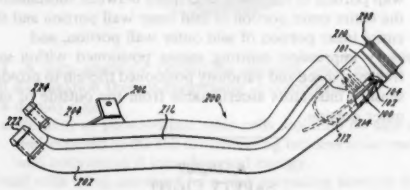
INHIBITION OF CHARGE ACCUMULATION

John E. Thorn, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 2, 1980, Ser. No. 193,243

Int. Cl.³ H05F 3/00

U.S. Cl. 361—215 24 Claims



11. In a plastic fuel filler means comprising (a) a hollow plastic pipe divided into first and second endwise adjoining hollow, cylindrical compartments and enabling transport through said second compartment of a flow of liquid fuel from a fuel dispensing means spout inserted through said first compartment into said second compartment; (b) a restrictor plate dividing said compartments and comprising an orifice through which said spout may be inserted into said second compartment from said first compartment and (c) means for rigidly mounting said restrictor plate in said pipe, the improvement which comprises a solid, tubular member, thinner than said plastic pipe, extending from an electrical contact of said spout to a location within said second compartment that carries a portion of said flow of liquid fuel, said member consisting essentially of a semi conductor having a volume resistivity between about 1×10^2–1×10^5 ohm-cm at 20° C.

4,319,304

TUBULAR CAPACITOR WITH AXIAL CONNECTIONS

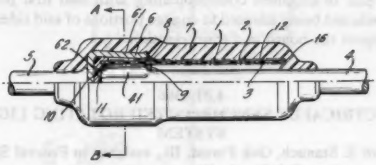
Rudolf Fink, Selb, Fed. Rep. of Germany, assignor to Draloric Electronic GmbH, Fed. Rep. of Germany

Filed Jun. 8, 1979, Ser. No. 46,660

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1978, 2850407; Dec. 16, 1978, 2854446; Dec. 21, 1978, 2855235

Int. Cl.³ H01G 1/14

U.S. Cl. 361—307 10 Claims



1. A tubular capacitor with axial connections, comprising:

a tubular dielectric member having an outer surface with an outer metal layer on it and an inner surface with an inner metal layer on it, said outer and inner layers defining opposed capacitor plates;

a connecting cap having a shell resiliently fitted over said outer layer and connected electrically with said outer layer and exerting a radially directed inward force on said tubular dielectric member;

a first connecting wire extending inside said inner layer and in electrical contact with said inner layer; said first connecting wire and said connecting cap extending in opposite axial directions;

a portion of said first connecting wire located inside said inner layer being widened at an area registering with and located inside said shell said widened area being of a size to exert a radially directed outward force on said tubular dielectric member; said widened portion of said first connecting wire and said shell which engages said outer layer being adapted to exert a pressure on said tubular dielectric member which is less than the permissible compressive strength of said dielectric member, said radially directed inward force placed on said tubular dielectric member by said shell being substantially counteracted by said radially directed outward force placed on said tubular dielectric member by said widened area of said connecting wire such that said tubular dielectric member is not subjected to impermissibly high breaking stresses.

4,319,305

PRINTING CIRCUIT BOARD MOUNTING SYSTEMS

James S. Meldrum, Strathaven, Scotland, assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 17, 1980, Ser. No. 160,359

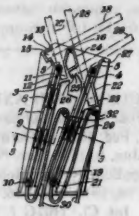
Claims priority, application United Kingdom, Jun. 20, 1979, 21436/79

Int. Cl.³ H05K 7/16

U.S. Cl. 361—415 20 Claims

1. A printed circuit board mounting system comprising a first pair of channels for each board to be mounted, said first pair of channels being adapted to engage portions of two opposite sides of the board and to support the board in a first

position, a second pair of channels for each board to be mounted, said second pair of channels communicating with said first pair of channels and being adapted to engage portions of said sides and to support the board in a second position, and



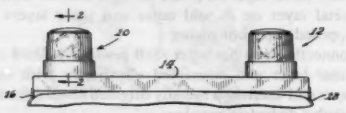
a third pair of channels for each board to be mounted, said third pair of channels communicating with said first pair of channels and being adapted to engage portions of said sides and to support the board in a third position.

4,319,306

ELECTRICALLY SYNCHRONIZED ROTATING LIGHT SYSTEM

Edward S. Stanuch, Oak Forest, Ill., assignor to Federal Signal Corporation, Oak Brook, Ill.

Filed Mar. 28, 1980, Ser. No. 135,103
Int. Cl.³ F21J *21/30*
U.S. Cl. 362—35 **10 Claims**



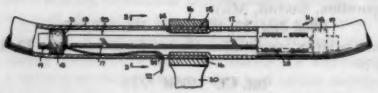
1. An electrically synchronized rotating light system including at least two rotating lights electrically wired to synchronize their speed and phase, said system comprising, in combination, a first rotatable master light, a master drive motor operatively connected with said master light for rotating the same, a second rotatable slave light, a slave drive motor operatively connected with said slave light for rotating the same, a power source connected to said master drive motor for effecting rotation of said master light, and synchronizing means interposed between said power source and said slave drive motor for conducting power to said slave drive motor only when said slave light is in a predetermined phase relation with said master light.

4,319,307

ILLUMINATED HANDLEBAR

Samuel Turner, 525 N. Atlanta Ave., Massapequa, N.Y. 11758

Filed Dec. 31, 1979, Ser. No. 108,420
Int. Cl.³ F21J *33/00*
U.S. Cl. 362—72 **9 Claims**



1. An illuminated handlebar adapted for attachment to a bicycle, velocipede and the like using a gooseneck clamp connected to a steerer rod, the handlebar comprising:

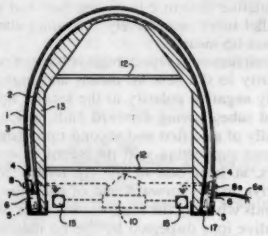
(a) an elongated flourescent bulb having insulated supporting end pieces,
(b) a pair of resilient mounting adapters attached to each inert end of the bulb,
(c) electrical connecting means attached at one end to the bulb,
(d) power means, and
(e) a first and second handlebar member, each member being a half portion of the handlebar, the first and second members having respectively at one end a male and female ferrule, said second member being adapted to engage said clamp, the bulb, adapter and connecting means assembly being insertable into the members, the other end of the connecting means passing through a hole proximate to either ferrule for connection to the power means, said members being slideably mounted at the ferruled ends and having a plurality of apertures proximate to the inserted elongated bulb whereby light emanating from the apertures illuminates both rider and path traveled.

4,319,308

HELMET FOR PROVIDING A SENSORY EFFECT TO AN OBSERVER

Augusto Ippoliti, and Silvana Lisotti, both of via di Quarto 34, Bagno a Ripoli (FI), Italy

Filed Nov. 7, 1979, Ser. No. 92,213
Claims priority, application Italy, Nov. 10, 1978, 11872/78[U]
Int. Cl.³ F21L *15/14*
U.S. Cl. 362—106 **12 Claims**



1. A helmet of the type particularly for motorcyclists for providing a sensory effect to observors, comprising:
an inner wall portion adapted to fit the head of a wearer and formed from a hard impact resistant material,
an outer wall portion spaced from and connected with said inner portion to provide a free interspace between said inner portion and said outer portion,
said outer wall portion substantially enclosing said inner wall portion to form said interspace between substantially the entire outer portion of said inner wall portion and the entire inner portion of said outer wall portion, and
sensory impression emitting means positioned within said free interspace and variously positioned therein to provide sensory indicators ascertainable from the outside of said outer portion.

4,319,309

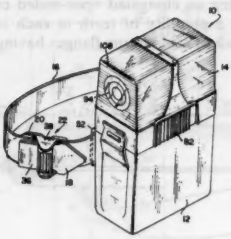
SAFETY LIGHT

Raymond A. Benoit, Vernon, France, assignor to Wonder Corporation of America, Conn.

Filed Nov. 5, 1979, Ser. No. 91,542
Int. Cl.³ F21L *15/14*
U.S. Cl. 362—108 **8 Claims**

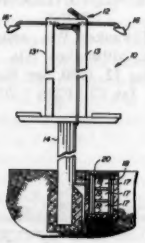
1. A safety light adapted to be carried by a person comprising:
a battery casing;
a lens casing supported on said battery casing, said lens

casing including at least one lens means disposed in a wall of said lens casing, and a internal light producing means;
a strap having two ends slidably affixed to said battery casing for attaching said safety light to a person,
closure means associated with said strap for securing said strap to form a band;
said closure means including a closure element having a base and two opposing side walls, said side walls extending



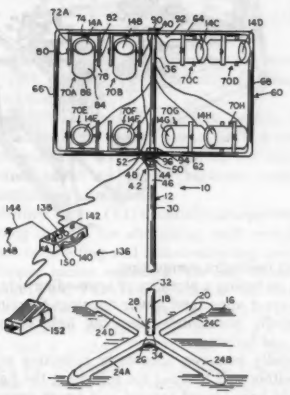
upward from the sides of said base; the width of said strap being substantially the width between said side walls, said closure means further including the ends of said strap having a second width wider than said first width whereby the ends of said strap are prevented from pulling out from said closure means, and
lock means rotatably received between said side walls for pressing two overlapping portions of said strap against said base.

4,319,310
SOLAR SIGNS
Vernon T. Kingsley, Camel Sq., Suite 145F, 4350 E. Camelback Rd., Phoenix, Ariz. 85018
Filed Jun. 25, 1980, Ser. No. 162,808
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—183 **4 Claims**



1. A sign assembly employing incident solar energy for self-illumination thereof comprising in combination:
a display sign,
a plurality of photovoltaic solar cells mounted on said sign and exposed to the sun for collecting incident solar energy and converting it into electrical energy,
said cells being mounted on a rack extending laterally from the top of said sign,
battery means connected to said solar cells for receiving and storing the electrical energy generated by said solar cells,
lamp means comprising at least one fluorescent tube mounted on said sign for periodic illumination thereof,
timing means connected to said battery means for selective energization of said lamp means from said electrical energy stored in said battery means, and
means connected between said battery means and said lamp means for converting the energy of said battery means into high voltage alternating electrical energy sufficient to operate said lamp means.

4,319,311
READILY COLLAPSABLE PORTABLE LIGHTING SYSTEM HAVING A SIMPLIFIED HOLDER FOR COLOR FILTERS
W. Phillip Mitchell, 717 Clark St., Maryville, Tenn. 37801
Continuation-in-part of Ser. No. 829,187, Aug. 30, 1977, Pat. No. 4,167,783. This application Apr. 6, 1979, Ser. No. 27,712
Int. Cl.³ F21V *21/22, 21/30*
U.S. Cl. 362—250 **9 Claims**



1. A portable lighting system suitable for easy assembly and disassembly and adapted for being driven by a common source comprising:
a light tree including,
base means resting on a horizontal support surface,
a support member having an upper and lower end releasably attached to said base means at said lower end and said upper end extending vertically above said base means and support surface, said upper end including a bore extending vertically down into said support member,
a substantially rectangular shaped light support frame having a top cross member and a bottom cross member said top and bottom cross members extending between two side members, said top cross member having an extension located substantially at a point on said top cross member equidistant between said side members and extending perpendicular from said top member in a downward and vertical direction, said perpendicular extension having a cross section suitable for fitting into said bore of said support member, and said bottom cross member including a resilient member attached substantially at a point on said bottom cross members equidistant between said side members and suitable for grasping said support member between said lower end and said upper end, said support frame being readily attached to and detached from said support member by inserting said perpendicular extension of said top cross member into said bore and grasping said support member with said resilient member attached to said bottom cross member, and
a plurality of lights mounted on said light support frame; and
control means connected to said source and each of said lights for controlling the intensity of at least one of said lights at a multiplicity of intensity levels including a foot operated rheostat.

4,319,312

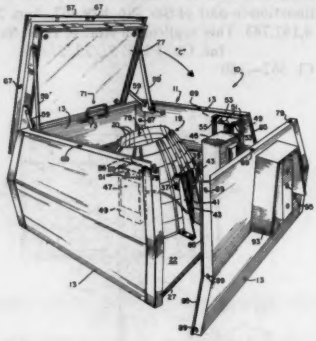
LUMINAIRE

Hendrick A. J. deVos, and Elzear R. Labouliere, both of Swansea, Mass., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 25,258, Mar. 29, 1979, abandoned. This application Nov. 5, 1980, Ser. No. 204,105

Int. Cl.³ F21V *13/06*

U.S. Cl. 362—282 **9 Claims**



1. A direct luminaire comprising:

a housing including a plurality of upstanding side walls, and spaced-apart upper and lower openings therein;

a substantially horizontally disposed light source located within said housing;

a substantially concave, specularly reflective reflector located within said housing for reflecting the light emitted from said light source toward said lower opening of said housing, said light source positioned within said reflector, said reflector including an aperture within the apex portion thereof to permit removal of said light source therethrough, said aperture located adjacent said upper opening of said housing;

a light-transmitting member positioned within said lower opening of said housing for having said light from said light source pass therethrough; and

a removable top cover member secured to at least one of said upstanding side walls of said housing for occupying first and second positions with respect thereto, said cover member providing a closure for said upper opening when said cover occupies said first position and permitting access to the interior of said housing and said removal of said light source through said aperture within said reflector when said cover occupies said second position, said cover member including a substantially diffusively reflective surface thereon located adjacent said aperture within said reflector for reflecting light from said light source toward said lower opening of said housing, said luminaire providing a substantially square pattern of illumination on a planar area located below said luminaire when said luminaire is located in a horizontal position.

4,319,313

LAMP SOCKET MOUNTING AND ADJUSTING ASSEMBLY

Clem W. Eberhart, Vicksburg, Miss., and Alexander Zwillich, Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

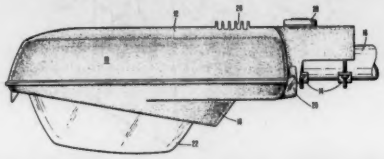
Filed Apr. 24, 1980, Ser. No. 143,209

Int. Cl.³ B60Q *1/00*

U.S. Cl. 362—370 **8 Claims**

1. In an outdoor lighting luminaire including an inverted open bottomed dish-shaped housing having a slip fitter mounting bracket on one end thereof and an optical cavity defined by a reflector secured to said housing and a refractor carrying door closing off the open bottom of said housing at the other end thereof, the improved lamp socket mounting and adjusting assembly secured to the interior of said housing comprising:

a bracket having a main body portion, a top flange extending normal to said main body portion, a pair of side flanges extending normal to said main body portion and a pair of bottom flanges extending at an obtuse angle from said main body portion, said main body portion having a socket receiving aperture therethrough, each of said side flanges having an elongated open-ended cut-out portion therein and a plurality of teeth in each of said cut-out portions, each of said bottom flanges having an elongated slot therein;



a socket mounting plate and a lamp socket, said socket mounting plate having a pair of notched arm portions extending laterally therefrom and a pair of L-shaped leg portions extending downwardly therefrom, said socket being mounted to one side of said socket mounting plate and said L-shaped leg portions including a threaded aperture therethrough; and

securing means extending through said elongated slots in said bottom flanges and threadably received in said threaded apertures in said L-shaped leg portions while said notched arm portions of said socket mounting plate are engaged with predetermined ones of said plurality of teeth in said cut-out portions of said side flanges, whereby said lamp socket may be predeterminably positioned with respect to said optical cavity.

4,319,314

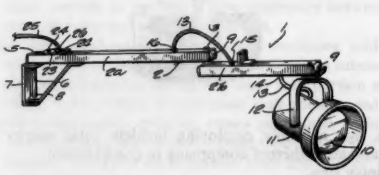
LIGHT FIXTURE WITH INTERNAL CONNECTION ZONE

James F. Morton, Milwaukee, Wis., assignor to Phoenix Products Company, Inc., Milwaukee, Wis.

Filed May 12, 1980, Ser. No. 149,235

Int. Cl.³ F21S *1/02*

U.S. Cl. 362—432 **3 Claims**



1. In an electrical light fixture of the type including a tubular arm, an electric light supported on the arm, and lamp wiring connected to the electric light and being at least partly arranged internally of the tubular arm, the improvement comprising:

an opening formed in the tubular arm to define thereunder a connecting zone within the arm;

the lamp wiring having conductor ends disposed within the connecting zone;

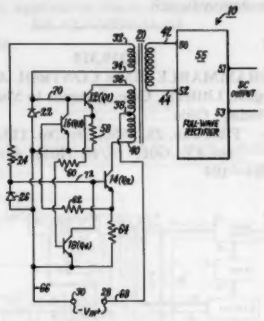
a cover attached to the tubular arm over the opening; and

an electrical power supply line extending through the cover and connected to the conductor ends of the lamp wiring in the connecting zone within the arm.

4,319,315
D.C. TO D.C. CONVERTER

Marvin F. Keeney, Jr., Springfield, Pa., and William A. Massey, Mt. Holly, N.J., assignors to General Electric Company, Philadelphia, Pa.

Filed Oct. 9, 1980, Ser. No. 195,582
Int. Cl.[3] H02M 3/335
U.S. Cl. 363—22 6 Claims



1. In a D.C. to D.C. voltage converter adapted for energization by a first D.C. voltage present between a positive and negative potential, said positive potential being connected to a center-tap of a primary winding of a saturable transformer, said saturable transformer having a core with a substantially square magnetic hysteresis loop characteristic, said negative potential being connected to a first and a second transistor which sequentially operate to couple said negative potential to opposite ends of said primary winding causing the core of the saturable transformer to be sequentially excited into its positive and its negative saturation conditions, said first and second transistors being controlled by a base drive circuit arranged across a first secondary winding of said saturable transformer having a voltage potential which experiences a rapid reversal as the transformer is excited into its negative and positive saturation conditions, said rapid reversal causing the base drive circuit to sequentially render conductive and non-conductive the states of the first and the second transistors, said sequential conduction of said first and second transistors causing said transformer to be sequentially driven into its saturation conditions which in turn develops a time varying signal at a second secondary winding of said transformer which is rectified by an A.C. to D.C. rectifier to develop a second D.C. voltage, said D.C. to D.C. voltage converter further comprising:

a third transistor interposed between said first and second transistor having its collector electrode connected to a base electrode of said first transistor and its base electrode coupled by a first means to an emitter electrode of said second transistor independently of said saturable transformer, and means comprising said first means responsive to the conduction of said second transistor for causing said third transistor to inhibit conduction of said first transistor,

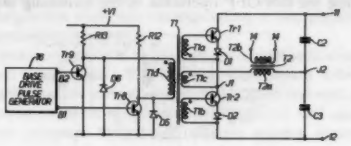
a fourth transistor interposed between said second and first transistor having its collector electrode connected to a base electrode of said second transistor and having its base electrode coupled by a second means to said emitter electrode of said first transistor independently of said saturable transformer, and means comprising said second means responsive to the conduction of said first transistor for causing said fourth transistor to inhibit conduction of said second transistor,

said arrangement of said first, second, third and fourth transistors inhibit simultaneous conduction of said first and second transistors and thereby reduces the commutational losses of said first and second transistors.

4,319,316
CONTROLLED POWER SUPPLY APPARATUS

Michael Farrer, Linton, and Raymond A. G. Perryman, Newmarket, both of England, assignors to Gould Advance Limited, Hainault, England

Filed Oct. 31, 1979, Ser. No. 90,061
Int. Cl.[3] H02M 1/12
U.S. Cl. 363—41 21 Claims



1. Power supply apparatus including an inverter circuit connected with a source of unidirectional voltage, said inverter circuit comprising:

(a) at least first and second switching devices (TR1, TR2) connected with said voltage source, each of said switching devices including a control terminal for controlling the respective switching device between conducting and non-conducting conditions;

(b) transformer means (T1) cyclically co-operating with said switching devices for alternating each switching device between conducting and non-conducting conditions, said transformer means including first and second switching windings (T1A, T1B) connected with the respective control terminals of said first and second switching devices, said transformer means further including a load winding (T1C) and a control (T1D), said load winding being adapted for connection with a load, load current being reflected from said load winding into said switching windings, whereby alternate conduction of said first and second switching devices is maintained during reflection of the load current to apply said voltage source in alternate sense across said load;

(c) short-circuit switching means connected with said control winding, said short-circuit switching means comprising first polarity switch means (TR8, D6) selectively providing a short-circuit path of one polarity, and second polarity switch means (TR9, D5) selectively providing a short-circuit path of the opposite polarity, whereby upon the application of a short circuit to said control winding by a respective one of said first and second polarity switch means, reflection of load current from said load winding to a respective one of said switch windings is terminated, thereby to render non-conducting the respective one of said switching devices; and

(d) means (16) for alternatively activating said first and second polarity switch means to provide a period of overlap between short circuits applied to said control winding by said first and second polarity switch means, said period of overlap providing a dwell period between switch-off of one said switching device and switch-on of the other said switching device, thereby to obtain pulse width modulation of the output to said load by said activating means.

4,319,317
D.C. POWER SUPPLY

Hiroshi Fukui, and Hisao Amano, both of Hitachi, Japan, assignors to Hitachi, Ltd. and Hitachi Metals, Ltd., both of Tokyo, Japan

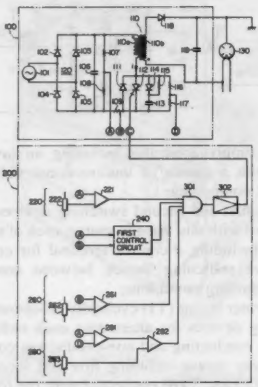
Filed Jul. 17, 1980, Ser. No. 169,770
Claims priority, application Japan, Aug. 22, 1979, 54/106042
Int. Cl.[3] H02M 7/00
U.S. Cl. 363—124 21 Claims

1. A d.c. power supply comprising a main circuit and a control unit;

said main circuit including a voltage source providing an a.c.

voltage having a predetermined first frequency; a rectifier circuit connected to said voltage source for converting said a.c. voltage into a d.c. voltage; and a switching element connected to said rectifier circuit and having an anode, a cathode and a control electrode for chopping said d.c. voltage at a predetermined constant second frequency higher than said first frequency in response to a control pulse applied to said control electrode; and

said control unit including a first control circuit for controlling the ON-OFF operation of the switching element of



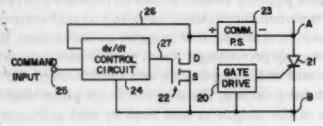
said main circuit, said first control circuit comprising first means for sensing the level of said d.c. voltage at an output terminal of said rectifier circuit, second means for generating a pulse signal having said constant second frequency, third means for controlling a duty ratio of said pulse signal in response to the output of the first means in such a manner that the duty ratio becomes greater as the output of the first means becomes lower, and means for applying said pulse signal to the control electrode of said switching element.

4,319,318

VOLTAGE REAPPLICATION RATE CONTROL FOR COMMUTATION OF THYRISTORS

Wally E. Rippel, Altadena, and Dean B. Edwards, Monrovia, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Sep. 15, 1980, Ser. No. 187,620
Int. Cl.[3] H02M *7/515;* H03K *17/73*
U.S. Cl. 363—138 **16 Claims**



1. A circuit for commutating a thyristor by shunting its current for a minimum interval, thereby removing sustaining current to said thyristor, then subsequently restoring voltage to said thyristor at a predetermined rate, comprising

a series combination of a commutation electronic switch and an isolated dc voltage supply connected in parallel with said thyristor, said commutation switch having a control input terminal, and said isolated dc voltage supply being arranged with a polarity that permits thyristor current flowing in one direction to be bypassed through said series combination while said commutation switch is turned on in response to a command input signal, and permits reverse biasing said thyristor when said commutation electronic switch is fully on, and

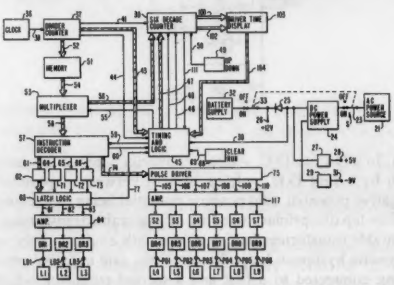
servo means for limiting the rate of rise of voltage across said commutation switch as said switch is turned off in response to said command input signal applied to said servo means, said servo means being connected to receive said command input signal, and connected to a sensing point on said series combination for sensing voltage across said commutation switch.

4,319,319

PROGRAMMABLE TIME CONTROL APPARATUS

N. D. Wygant, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Jan. 28, 1980, Ser. No. 115,869
Int. Cl.[3] G06F *15/46;* H01H *43/00*
U.S. Cl. 364—104 **1 Claim**



1. An improved programmable test control apparatus comprising:

timing means for providing a reference time output during a test cycle,

a plurality of storage means pre-programmed with instruction data and time data and responsive to said reference time output for producing instruction data and time data outputs according to selected program,

a circuit means coupled to said storage means and said timing means including a comparator for comparing all time data in said storage means with said reference time output and producing a synchronous output when the reference times and storage times are equal,

decoding means coupled to an inserted one of said plurality of storage means and said circuit means responsive to said synchronous output for decoding the instruction data and time data outputs from said inserted storage means into a plurality of different control outputs at programmed times for sequentially actuating a plurality of different electrically actuated loads, said decoding means being further responsive to the presence of predetermined instruction data and time data for selectively stopping and resetting said timing means at the end of said test cycle,

means connected to said decoding means for displaying which of said control outputs become activated at said programmed times,

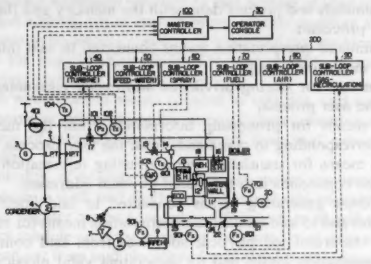
means connected between said decoding means and said displaying means for overriding said storing means by manually activating selected ones of said control outputs, and

each of said plurality of program storage means being capable of being preprogrammed and each being further capable of being selectively and manually insertable into said programmable time control apparatus at any time during the operation of said programmable time control apparatus by manually activating said overriding means during said selective insertion of said preprogrammable storage means.

4,319,320
SYSTEM AND METHOD FOR ADAPTIVE CONTROL OF PROCESS

Yoshio Sato, Hitachi; Nobuo Kurihara, Hitachiota; Masahide Nomura, Hitachi; Shigeyoshi Kawano, Kure, and Tadayoshi Saito, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 23, 1979, Ser. No. 41,646
Claims priority, application Japan, May 24, 1978, 53-61008
Int. Cl.³ G05B *13/02*
U.S. Cl. 364—165 **15 Claims**



1. A method for the adaptive control of a process comprising the steps of generating in accordance with a predetermined function a feed forward control signal for controlling a process variable on the basis of a process demand, generating an output representing a measured value of the process variable, generating an output representative of a predetermined value of the process variable, generating a feedback correction signal in accordance with a difference between the outputs of the measured and predetermined values of the process variable, controlling the process variable in accordance with the feed forward control signal and the feedback correcting signal, determining whether the process is in a steady state or not, and modifying the predetermined function utilized for generating the feed forward control signal when it is determined that the process is in the steady state, the modifying of the predetermined function utilized for generating the feed forward control signal being effected so as to reduce the amount of the feedback correction signal, and further comprising the step of modifying the feedback correction signal in accordance with the amount of modification of the predetermined function utilized in generating the feed forward control signal when the process is determined to be in the steady state.

4,319,321
TRANSITION MACHINE—A GENERAL PURPOSE COMPUTER

Mark S. Anastas, Auburn, and Russell F. Vaughan, Enumclaw, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 11, 1979, Ser. No. 38,292
Int. Cl.³ G06F *7/00, 9/46*
U.S. Cl. 364—200 **52 Claims**

46. A computing system comprising:

(a) a plurality of data processors connected for accessing application program memory storage means and data memory storage means, said data memory storage means having at least a data memory area commonly accessible by said plurality of data processors;

(b) a system controller including:

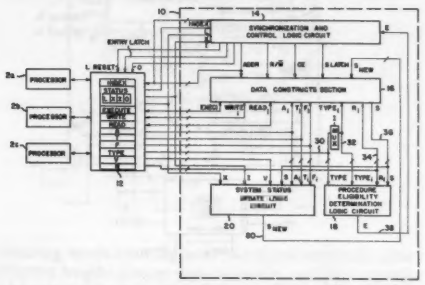
(1) a status register for storing binary status indications S_j of a plurality of data conditions j appropriate for determining eligibility of a computational problem to be solved by said computing system, said computing system solving said computational problem by execution of a plurality of application programs stored in said application program memory storage means;

(2) a relevance matrix store for storing binary indications R_{ij} of the relevance of each data condition j to each application program i;

(3) means responsive to said binary status indications S_j and said data processors for updating at least two of said binary status indications of said status register in response to non-predetermined, data dependent changes of the binary status of at least one of said data conditions upon execution of said application programs;

(4) means for storing a plurality of application program designation addresses corresponding to said plurality of application programs;

(5) means responsive to said binary status indications of said status register, said corresponding binary relevance indications of said relevance matrix store and said application program designation addresses of said application program designation address storing means for



determining the eligibility of said plurality of application programs for execution by said plurality of data processors and for generating designation addresses from said application program designation address storage means for application programs determined to be eligible, wherein eligible programs are executed concurrently in said plurality of data processors; and

(6) synchronization and control logic means connected to said eligibility determining means, said relevance matrix store and said application program designation address storing means for synchronizing and controlling operation of said system controller;

whereby said system controller forms a hardware executive apparatus for said computing system; and

(c) interface means connected between said plurality of data processors and said system controller for interfacing operation of said data processors and system controller.

4,319,322
METHOD AND APPARATUS FOR CONVERTING VIRTUAL ADDRESSES TO REAL ADDRESSES

Jacques M. Allain, Pleumeur Bodou; Daniel Courtel, Louannec; Jean L. Joubert, and Jean P. Vidonne, both of Paris, all of France, assignors to Le Material Telephonique, Boulogne-Billancourt, France

Filed Jul. 13, 1979, Ser. No. 57,437
Claims priority, application France, Jul. 19, 1978, 78 21403
Int. Cl.³ G06F *9/36*
U.S. Cl. 364—200 **5 Claims**

1. Apparatus for converting virtual addresses into real addresses for use in real-time data processing systems, wherein programs are divided into functional sets, each of said functional sets being divided into segments having respective labels, said virtual address containing a segment number and a displacement within said segment, said data processing system comprising a central memory **3**, said apparatus comprising a segment label table storage **7** which is located in said central memory, a plurality of base registers **4** which are able to store segment labels contained in said segment label table storage and relating to a current functional set, and an adder **5** which

performs the addition of a current segment label given by said base registers addressed with said segment number contained in said virtual address, and of said displacement within said segment contained in said virtual address, said real address consisting in the result of the addition, the improvement comprising a base register updating circuit **8** which comprises: a validity indicator table means **9** for indicating the validity, with respect to said current functional set, of said segment labels contained in said base registers, said validity indicator of said

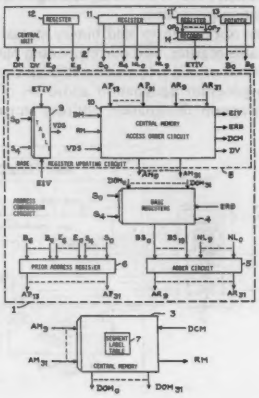


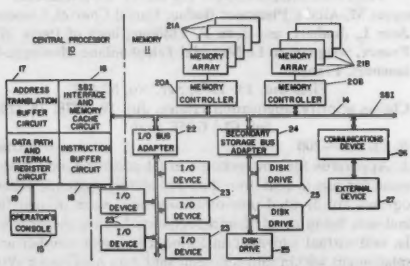
table of validity indicators being in a first or in a second logic state depending upon whether or not said current segment label has already been loaded in said base registers, and a central memory access order circuit means **10** for ordering either normal instruction execution access, or a prior access to said segment label table storage in order to fetch said current segment label and to load it in said base registers, followed by normal access, depending on whether or not said validity indicator corresponding to said current label is in said first or said second logic state.

4,319,323

COMMUNICATIONS DEVICE FOR DATA PROCESSING SYSTEM

Thomas R. Ermolovich, Lexington; Robert E. Stewart, Stow; Judson S. Leonard, Acton, all of Mass., and David N. Cutler, Nashua, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 4, 1980, Ser. No. 137,525
Int. Cl.[3] **G06F** *3/00, 13/00*
U.S. Cl. 364—200 **8 Claims**



1. A communications device for connecting an external device, that transfers process data, and a data processing system that includes a memory including a plurality of addressable storage locations for storing privileged operating system programs including privileged addressing parameters, and a non-privileged user process composed of a user process program, a comman buffer for storing commands including addressing information and a data buffer for storing process data to be transferred to or from the external device, the memory locations assigned to the user process being identified by the privileged addressing parameters, said data processing system further comprising a central processor for processing the operating system and the user process programs, and communications device comprising:

A. interfacing means that connect to the memory and to the central processor for transferring information, including commands and process data, with the memory and the central processor,

B. command interpretation means connected to said interfacing means including

(i) means for storing privileged addressing parameters for the user process;

(ii) means for processing information from the memory corresponding to commands from the user process, and

(iii) means for translating the addressing information from the commands into translated physical addresses,

C. address generating means connected to said interfacing means and to said command interpretation means for receiving the translated physical addresses from said command interpretation means and for generating valid physical addresses of locations in the memory that correspond only to the physical addresses of the user process,

D. process data path means connected to said interfacing means and the external device for transferring process data between the interfacing means and the external device, and

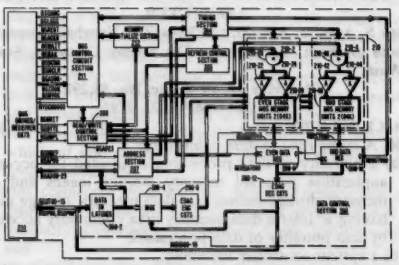
E. memory reference means connected to said interfacing means, said address generating means, said command interpretation means and said process data path means for initiating transfer of information between a location in the memory identified by said address generating means and one of said address generating means, command interpretation means and process data means whereby user process commands and process data are transferred directly between the user process and the external device independently of the operating system programs.

4,319,324

DOUBLE WORD FETCH SYSTEM

Robert B. Johnson, Billerica; Chester M. Nibby, Jr., Peabody, and Dana W. Moore, Dover, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 8, 1980, Ser. No. 110,522
Int. Cl.[3] **G06F** *13/00*
U.S. Cl. 364—200 **30 Claims**



1. A memory subsystem for use in a system including a processing unit coupled to a single word bus in common with said subsystem for transfer of information therebetween during bus transfer cycles of operation, said processing unit being operative to generate memory requests on said bus to said subsystem, each of said requests including a multibit address and certain ones of said requests being coded to specify a

predetermined type of memory operation, said memory subsystem comprising:

a plurality of independently addressable memory module units, each memory unit including a plurality of rows of random access memory chips;

address register means for storing a plurality of least significant address bits of each said address;

sequential decode and addressing means coupled to said address register means, to said bus and to said memory module units, said means being operative to generate simultaneously a plurality of sequential row address select signals and corresponding sequential addresses from said multibit address in response to said number of least significant address bits of each memory request enabling simultaneous access to a plurality of sequential storage locations in the rows of chips specified by said plurality of address select signals;

read/write control means coupled to said bus, said control means including means for storing signals indicative of the type of memory request received from said processing unit;

a plurality of tri-state output register means connected in common with said single word bus and said tri-state output register means coupled to different ones of said memory module units for receiving the plurality of data words read out from said plurality of sequential storage locations during a single bus cycle in response to said read type request; and,

control means coupled to said plurality of tri-state output register means, to said address register means and to said read-write control means, said control means being operative in response to signals from said read/write control means indicative of said predetermined type of memory opeation to condition said plurality of tri-state output register means to apply in succession each of said plurality of data words to said bus for transfer to said processing unit over successive bus cycles of operation.

4,319,325

DIGITAL PROCESSOR FOR PROCESSING ANALOG SIGNALS

Marcian E. Hoff, Jr.; Marshall A. Townsend, and Stephen F. Dreyer, all of Sunnyvale, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 85,247, Oct. 16, 1979, abandoned, which is a continuation of Ser. No. 927,029, Jul. 24, 1978, abandoned. This application Feb. 11, 1980, Ser. No. 120,701

Int. Cl.³ G06F *7/48, 7/52*

U.S. Cl. 364—200 **14 Claims**

8. A digital processor for processing analog signals comprising:

a program storage means for storing a digital program;

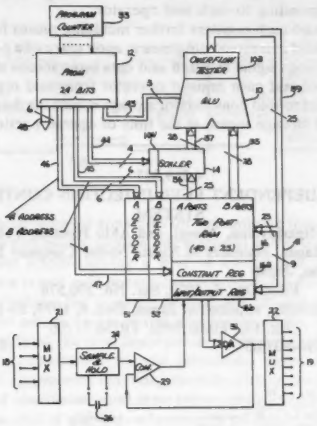
input means for receiving said input analog signal to said processor and for converting said signal to an input digital signal;

a random-access memory coupled to said storage means for receiving address signals from said storage means and coupled to said input means for receiving and storing said input digital signals; said memory for storing digital words of n-bits in length;

an arithmetic logic unit (ALU) coupled to said program storage means for receiving ALU control signals and for performing digital arithmetic, said ALU coupled to receive a first signal representing a first operand from said memory, to receive a second signal representing a second operand and to provide an output signal for storage in said memory;

a scaler means for shifting a digital signal, said scaler means being coupled to said program storage means for receiving scaler means control signals, and coupled to receive signals from said memory and coupled to said ALU to provide said second signal representing said second operand,

said ALU for performing said digital arithmetic on said first and second operand greater in length than said n-bits, and coupling results having a length not exceeding n-bits to said memory, said ALU having means coupled thereto for



detecting words resulting from said digital arithmetic with effective lengths greater than said n-bits, and for coupling predetermined words of n-bits in length to said memory upon said detection;

whereby special processing of words greater in length than said n-bits is greatly reduced thereby providing more rapid processing of signals.

4,319,326

ELECTRONIC CASH REGISTER SYSTEM WITH CONSOLIDATING MEANS

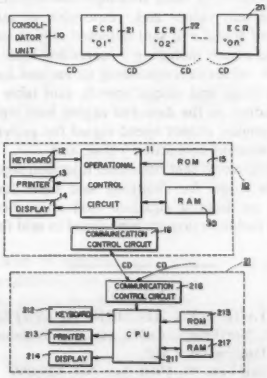
Yoritoshi Uchida, Yawata, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Mar. 11, 1980, Ser. No. 129,319

Claims priority, application Japan, Apr. 3, 1979, 54-41460

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—405 **6 Claims**



1. Electronic cash register system comprising a plurality of individually self-contained electronic cash registers and a consolidator unit associated with said cash registers,

each of said cash registers including a data input means, a

register storage means for storing data entered into the register by an operator through the data input means and communicating means for transmitting the data stored in said register storage means to said consolidator unit,

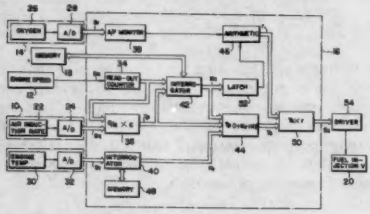
said consolidator unit including a consolidator storage means for storing the data transmitted from each of said communicating means in a discrete storage area thereof corresponding to each said operator,

each of said cash registers further including means for operating said communicating means upon entry of a predetermined data signal through said data input means at retirement of said cash register operator from said register to transmit to said consolidator storage means the data stored in said storage means at the time of operator retirement.

4,319,327
LOAD DEPENDENT FUEL INJECTION CONTROL SYSTEM

Kazuhiro Higashiyama, Atsugi, and Akio Hosaka, Yokohama, both of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed Dec. 5, 1979, Ser. No. 100,570
Claims priority, application Japan, Dec. 6, 1978, 53-149931
Int. Cl.³ F02D *5/02;* **F02M** *51/00*
U.S. Cl. 364—431.05 **10 Claims**



6. A fuel injection amount control system for a fuel injection valve of an internal combustion engine, comprising:

engine load detecting means for detecting the load on the engine and producing a signal representative of said detected engine load;

engine speed detecting means for detecting the output speed of the engine and producing a signal representative of said detected engine output speed;

means for generating basic fuel injection signals and injection correction values and, responsive to said detected engine load signal and said detected engine output speed signal, said means including a correction table storing the correction values corresponding to various combinations of engine loads and output speeds, said table being read out depending on the detected engine load signal and the detected engine output speed signal for providing a fuel injection amount correction value; and

means, responsive to said basic fuel injection signal and said correction value, for changing said basic fuel injection signal by an amount equal to said correction value to provide a fuel injection amount signal to said fuel injection valve.

4,319,328
POSTAGE COST RECORDING SYSTEM

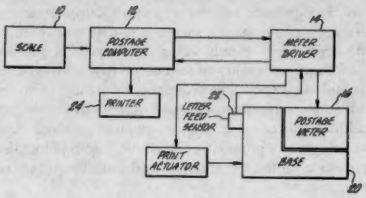
Carl A. Eggert, Northridge, Calif., assignor to Sabre Products, Inc., North Hollywood, Calif.

Filed Feb. 27, 1980, Ser. No. 125,099
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—466 **16 Claims**

1. A cost recording system for use with a metering apparatus wherein the metering apparatus includes means for feeding a plurality of items through the apparatus and printing means for printing cost indicia onto the items, the cost recording system comprising

item feed sensor means for providing an output in response to the passage of each item of the plurality of items through the metering apparatus, and

computing means including means for calculating the

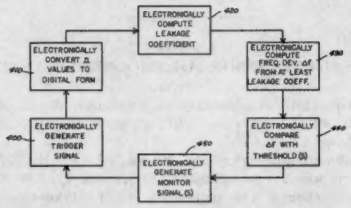


amount of the cost indicia, means responsive at least to the indicia calculating means for generating an item record in response to the item feed sensor means output, the item record including at least the amount of the cost indicia, means responsive to the record generating means for storing the item record, and means for providing an output of the stored item record.

4,319,329
FREQUENCY MEASURING AND MONITORING APPARATUS, METHODS AND SYSTEMS

Adly A. Girgis, and Fredric M. Ham, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Feb. 21, 1980, Ser. No. 123,213
Int. Cl.³ G06F *15/56;* **G01R** *23/16*
U.S. Cl. 364—484 **21 Claims**


ELECTRONICALLY COMPUTE LEAKAGE COEFFICIENT
ELECTRONICALLY CONVERT Δ VALUES TO DIGITAL FORM
ELECTRONICALLY COMPUTE FREQ. DEV. Δf FROM AT LEAST LEAKAGE COEFF.
ELECTRONICALLY GENERATE TRIGGER SIGNAL
ELECTRONICALLY COMPARE Δf WITH THRESHOLD (S)
ELECTRONICALLY GENERATE MONITOR SIGNAL (S)

1. Apparatus for measurement, relative to a reference frequency f, of frequency deviation Δf of frequency of a substantially single-frequency sinusoidal waveform having electrical values including zero-crossings and being provided to said apparatus, said apparatus comprising:

means for generating triggering signals, each triggering signal being in response to a respective one of at least some of said zero-crossings of said waveform;

converting means being responsive to said waveform and to said each said triggering signal so that said converting means produces n digital representations, n being a whole number of at least 4, corresponding to n electrical values of said waveform occurring during a period 1/f of the reference frequency, one of said n digital representations corresponding to a time-wise first one of said n electrical values, said first one value being located fΔt reference cycles relative to the zero-crossing nearest said each said triggering signal, Δt being a time interval; and

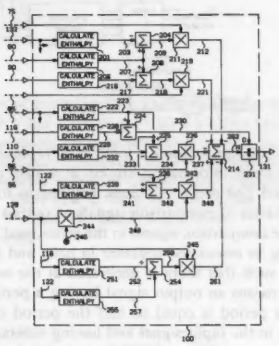
stored program computing means for receiving said n digital representations and computing a leakage coefficient of the discrete Fourier transform of said n digital representations and then computing the measured frequency deviation Δf from at least the leakage coefficient so that the frequency

deviation so computed is substantially accurate in view of the number n and the quantity $f\Delta t$.

4,319,330
FRACTIONAL DISTILLATION COLUMN CONTROL

Danny L. Furr, Broken Arrow, Okla., assignor to Phillips Petroleum Co., Bartlesville, Okla.

Filed May 1, 1980, Ser. No. 145,640
Int. Cl.³ B01D *3/42*
U.S. Cl. 364—501 **8 Claims**



1. Apparatus comprising:

a fractional distillation column means;

means for supplying a feed stream to said fractional distillation column means;

means for supplying heat to said fractional distillation column means;

means for withdrawing a side draw stream from a first intermediate portion of said fractional distillation column means;

means for recycling a portion of said side draw stream to a second intermediate portion of said fractional distillation column means located above said first intermediate portion of said fractional distillation column means as an intermediate external reflux for said fractional distillation column means;

means for withdrawing a portion of said side draw stream as a side draw product stream from said fractional distillation column means;

means for establishing a first signal representative of the flow rate of said intermediate external reflux required to maintain a desired ratio between the flow rate of the internal reflux at said first intermediate portion of said fractional distillation column means and the flow rate of said side draw product stream;

means for establishing a second signal representative of the actual flow rate of said intermediate external reflux;

means for enabling said means for establishing a second signal to sense the actual flow rate of said intermediate external reflux in said means for recycling;

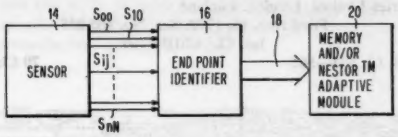
means for comparing said first signal and said second signal and for establishing a third signal responsive to the difference between said first signal and said second signal; and

means for manipulating the flow rate of said intermediate external reflux in response to said third signal.

4,319,331
CURVE FOLLOWER

Charles Elbaum, and Leon N. Cooper, both of Providence, R.I., assignors to Nestor Associates, Stonington, Conn.

Filed Jan. 28, 1980, Ser. No. 116,034
Int. Cl.³ G08C *21/00*
U.S. Cl. 364—515 **26 Claims**

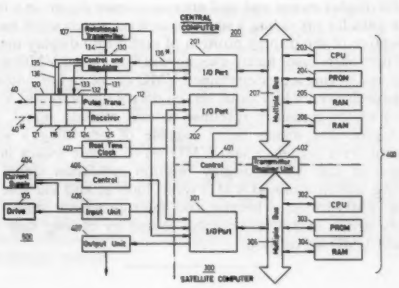


10. Curve follower apparatus for determining the coordinate points, in succession, along a line arranged within a prescribed coordinate system having a grid of spaced and distributed coordinate points, said apparatus comprising: (a) sensor means, for determining the presence of said line at said coordinate points; (b) means, responsive to said sensor means, for repeatedly identifying the coordinate points at an end of said line; and (c) means, connected to said coordinate point identifying means, for repeatedly inhibiting identification of the previously identified coordinate point at an end of said line, thereby defining a new end of said line; whereby the succession of inhibited coordinate points specifies the sequential path of said line along the grid from the originally identified end.

4,319,332
METHOD AND APPARATUS FOR SPACE MONITORING BY MEANS OF PULSED DIRECTIONAL BEAM

Walter Mehnert, Ottobrunn, Fed. Rep. of Germany, assignor to Zellweger Uster Ltd., Uster, Switzerland

Continuation-in-part of Ser. No. 30,338, Apr. 16, 1979, abandoned. This application Oct. 22, 1979, Ser. No. 87,170
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1978, 2818942
Int. Cl.³ G08B *13/18*
U.S. Cl. 364—516 **77 Claims**



1. A method of monitoring a region by means of pulsed directional radiation, comprising the steps of:

fixing certain points in space to define at least one virtual line or virtual surface;

dividing a surface into partial surfaces by means of said virtual line or a space into partial spaces by means of said virtual surface;

assigning a respective predetermined significance to each said partial surface or partial space;

utilizing measuring beams possessing a substantially punctiform expanse at the virtual line or virtual surface or at an object to be detected;

transmitting the measuring beams in defined directions; and

determining by means of the transmitted measuring beams at least one parameter for the identification of at least one object.

4,319,333

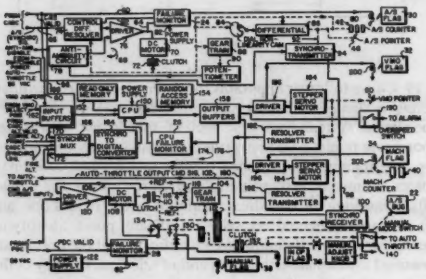
MACH AIRSPEED INDICATOR

Geoffrey S. M. Hedrick, Malvern, Pa., assignor to Smiths Industries Limited, London, England

Filed Dec. 19, 1979, Ser. No. 105,035

Int. Cl.[3] G01P *5/00*

U.S. Cl. 364—565 **70 Claims**



1. In an airspeed indicator apparatus comprising a VMO display means responsive to variable measured airspeed and altitude information provided thereto; the improvement comprising means for receiving said variable measured altitude information and providing an altitude signal therefrom; and a first closed VMO servo loop operatively connected to said variable altitude information receiving means for receiving said altitude signal therefrom and directly driving said VMO display means in response thereto, said first closed VMO servo loop comprising microprocessor means, VMO servo means operatively connected between said microprocessor means and said VMO display means for directly driving said VMO display means in response to servo control signals provided thereto from said microprocessor means, and VMO display position indicating means operatively connected between said VMO display means and said microprocessor means in a feedback path for providing a signal to said microprocessor means indicative of the display position of said VMO display means, said microprocessor means closing said first closed VMO servo loop and storing a predetermined VMO curve and providing a variable desired VMO value servo control signal to said VMO servo motor means in response to said altitude signal, said microprocessor means being capable of providing a servo control error signal to said VMO servo motor means in response to said VMO display position indication signal for nulling said first closed VMO servo loop at said variable desired VMO value, whereby said microprocessor means directly drives said VMO display means by closing said first closed VMO servo loop.

4,319,334

FREQUENCY SENSING DEVICE FOR REDUCING NON-PERIODIC COMPONENTS

George W. Gurry, 3 Highfield Close, Danbury, Essex, England

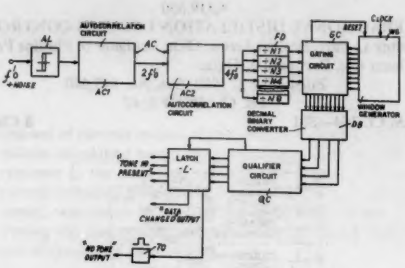
Filed Oct. 26, 1979, Ser. No. 89,262

Claims priority, application United Kingdom, Oct. 27, 1978, 42202/78

Int. Cl.[3] G06F *15/20, 15/336*; H04B *15/00*

U.S. Cl. 364—574 **31 Claims**

1. A device for generating an electrical signal having a periodic component representative of a periodic component of an electrical input signal and containing fewer non-periodic components than the electrical input signal, the device comprising autocorrelation means having a first series of stages for storing information, means for applying the electrical input signal or a signal representing variation with time of an electrical parameter of the input signal to an input to said autocorrelation means, means for periodically causing information representing the electrical parameter at said input to enter a first stage in said first series of stages and advancing information in each said stage to a respective next succeeding stage, and means which, in the interval of time between each entry of information into said first stage and the next succeeding entry of information, generate a series of comparison signals, each of



the comparison signals being a logic level representing a comparison between information stored at a pair of associated stages in said first series of stages, and means for generating from each series of comparison signals an output representing a sum of the comparison signals in the series, said first series of stages being so associated together in pairs and the comparisons being such that there is generated at the output of said generating means an output signal having a periodic component whose period is equal to half the period of a periodic component in the input signal and having substantially fewer non-periodic components than the input signal.

4,319,335

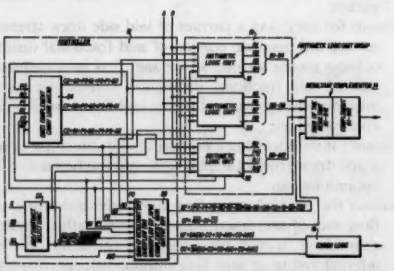
ARITHMETIC LOGIC UNIT CONTROLLER

Louis P. Rubinfield, Norristown, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 16, 1979, Ser. No. 85,433

Int. Cl.[3] G06F *7/50*

U.S. Cl. 364—787 **7 Claims**



1. A control circuit for controlling a high speed parallel digital adder which adds two digital operands, the digital adder having available as inputs: carry propogate and generate output signals, the most significant bit of one of the operands, the signs of the operands, and an add/subtract control signal, comprising: a single integrated circuit having;

add/subtract select logic receiving the signs of the two operands and the add/subtract control signal for generating add/subtract select signals to control selection of the addition or subtraction function of the digital adder,

one's complement carry look ahead logic receiving said

carry propagate and generate output signals for generating multiple carry look ahead signals for use in said digital adder; and

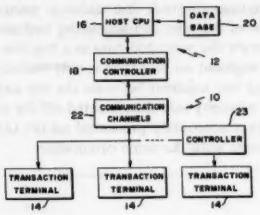
logic means receiving said carry propogate and generate output signals, at least one of said carry look ahead signals, the most significant bit and sign of one of said operands and said add/subtract select signals for computing a sign of the resultant of the two digital operands, a complement data output for complementing the resultant, an underflow and an overflow, all for use in said digital adder.

4,319,336

TRANSACTION EXECUTION SYSTEM WITH IMPROVED KEY FUNCTION VERSATILITY

Robert W. Anderson, Morgan Hill; May L. Gee, San Jose, and Alice K. McMullen, Campbell, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 2, 1979, Ser. No. 9,384
Int. Cl.[3] G06F *3/023, 3/04*
U.S. Cl. 364—900 **7 Claims**



1. For use in a transaction execution system which is shared by a plurality of institutions and which includes at least one terminal remote from and in communication with a host data processing system, a terminal comprising:

keyboard means operable by a customer of a specific one of said institutions for entering transaction data and including a plurality of transaction keys representing different transaction steps selectively operable by said customer,

communication port means for receiving keyboard control data blocks from a host data processing system;

first storage means for storing a plurality of keyboard control data blocks received from the host data processing system and unique to the respective institutions, each said keyboard control data block assigning a particular one of a plurality of different key states to each of said plurality of transaction keys;

means responsive to entry by the customer of data identifying said specific institution for locating the keyboard control data block corresponding to said specific institution; and

transaction processing means responsive to selection by the customer of one of the plurality of transaction keys and to entry of the institution identifying data for processing a transaction step represented by the selected transaction key in accordance with the key state assigned to the selected transaction key by the keyboard control data block located by the entry responsive means;

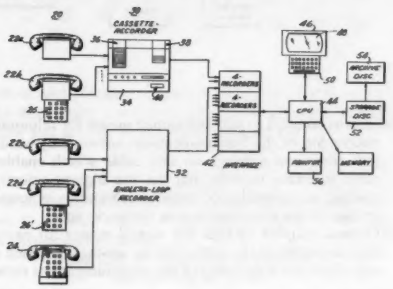
whereby the processing at said terminal of transaction keys activated by said customer of a specific institution to select transaction steps is performed in accordance with respective key states assigned to said transaction keys by said specific institution via the communication port means from the host data processing system.

4,319,337

APPARATUS FOR DISPLAYING THE STATUS OF INDIVIDUAL DICTATED MESSAGES IN A CENTRAL DICTATION SYSTEM

Willy M. Sander, Stamford; David L. Boudreau, Shelton, and G. Burnell Hohl, Norwalk, all of Conn., assignors to Dictaphone Corporation, Rye, N.Y.

Filed Oct. 12, 1979, Ser. No. 84,122
Int. Cl.[3] G06F *3/04*
U.S. Cl. 364—900 **50 Claims**



1. Apparatus for storing and displaying the status of individual dictated messages in a central dictation system of the type having at least one recorder, a plurality of dictate stations operatively connected to and adapted to seize said recorder, and at least one transcribe station assignable to transcribe said dictated messages, said apparatus comprising station sensing means coupled at least to said recorder for sensing when a dictate station seizes a recorder to commence the recording to a dictated message; and display means including a display screen for displaying information identifying predetermined parameters related to said message being recorded, said displayed information including the completion status of said message, immediately following the seizure of said recorder by said dictate station.

4,319,338

INDUSTRIAL COMMUNICATIONS NETWORK WITH MASTERSHIP DETERMINED BY NEED

Raymond A. Grudowski, South Euclid, and Jonathan R. Engdahl, Maple Heights, both of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Dec. 12, 1979, Ser. No. 102,970
Int. Cl.[3] G06F *3/00*
U.S. Cl. 364—900 **16 Claims**

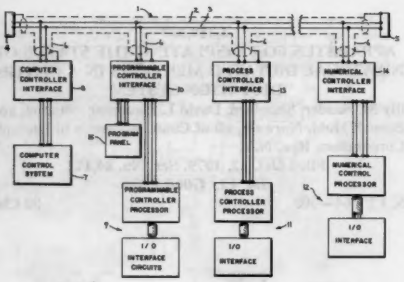
1. A communications network which comprises:

a cable;

a plurality of interface modules connected to the cable, each interface module being operative to couple data messages between the cable and an associated electrical device and each interface module including:

(a) means responsive to a poll command message on the cable for obtaining mastership of the communications network;

(b) means coupled to said last named means for sending a data message on said cable to another interface module on the communications network;



(c) means coupled to said last named means for relinquishing mastership of the communications network by sending a poll command message on said cable which enables another interface module that has the highest priority according to a preselected priority scheme to assume mastership of the communications network; and

(d) means coupled to said last named means for receiving data messages on the cable sent by another interface module which has mastership of the communications network.

4,319,339

LINE SEGMENT VIDEO DISPLAY APPARATUS

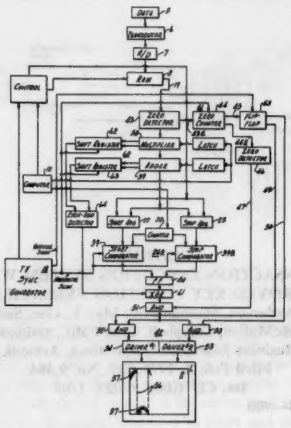
James Utzerath, 12024 W. Kaul Ave., Milwaukee, Wis. 53225

Division of Ser. No. 695,100, Jun. 11, 1976, Pat. No. 4,145,754. This application Mar. 16, 1979, Ser. No. 21,102

Int. Cl.³ G06F *3/14*

U.S. Cl. 364—900 **4 Claims**

1. A graphical display apparatus having display tube means having a display portion and a scanning display beam for generating line segments for forming of the graphical display on the display portion of said tube means, a truncated digital memory means including a plurality of memory locations storing stop and start data defining start and stop data points for each line segment of a display, comprising a signal driver connected to said tube means for energizing said display beam, the top and bottom of the line segment being defined by digital coordinates, said digital coordinates include points outside the display portion of the tube means, a signal control means having addressing means and reading means connected to read said memory locations of said memory means and producing signals corresponding to said start and stop data and connected to said signal driver for generating a moving graphical display on said tube means, complementing means connected between the signal driver and the signal control means, and arithmetic logic unit means connected to said signal control means for changing the digital coordinates of said start and stop data points as stored in said memory means and creating overflow bits in said digital coordinates, and monitor means connected to said signal control means, to said complementing means and to said arithmetic logic unit means to monitor said overflow bits created by said arithmetic logic unit means for detecting off scale start and stop data signals identifying a stop point located off the top portion of the tube and defining a location on the bottom portion of the tube spaced from the bottom of



the tube by the same distance that said stop point is located off the top portion of the tube and activating said complementing means to generate the recorded data as a top line segment and a bottom line segment on said tube means exclusive of display of a connecting line segment between the top and bottom line segments and whereby said data located off the top portion of the tube means is accurately presented on the bottom portion of the tube means with the same orientation.

4,319,340

Patent Not Issued For This Number

4,319,341

PROGRAMMING CIRCUIT FOR PERMANENTLY STORING DATA IN A PROGRAMMABLE READ ONLY MEMORY

Toshitaka Fukushima, Yokohama; Kazumi Koyama, Kanagawa; Kouji Ueno, Kawasaki; Tamio Miyamura, Kawasaki, and Yuichi Kawabata, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 21, 1980, Ser. No. 141,933

Claims priority, application Japan, Apr. 25, 1979, 54-51242

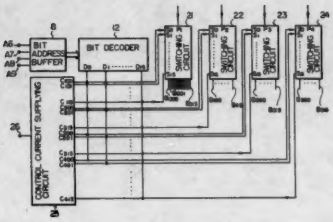
Int. Cl.³ G11C *7/00, 17/00*

U.S. Cl. 365—94 **6 Claims**

1. A program circuit for permanently storing data in a programmable read only memory, said program circuit including:

a bit address decoder;

at least one switching means comprising a plurality of control inputs connected respectively to the outputs of said decoder, a program input to which program power is to be applied, and a plurality of outputs connected respectively to the bit lines of the programmable read only memory, and



control current supplying means having an input and a plurality of outputs, each of said outputs being connected to one of said control inputs of said switching means,

wherein, when a control signal is applied to said input of said control current supplying means, control current is supplied to each of said control inputs, and

wherein, when the program power is applied to said program input, said respective switching means connected to said program input causes the program power to flow through one of the bit lines.

4,319,342

ONE DEVICE FIELD EFFECT TRANSISTOR (FET) AC STABLE RANDOM ACCESS MEMORY (RAM) ARRAY

Roy E. Scheuerlein, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,641

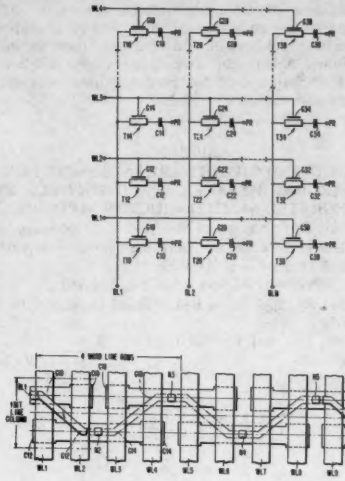
Int. Cl.³ G11C *11/24, 11/40, 5/10*

U.S. Cl. 365—149 **29 Claims**

1. An integrated circuit electronic memory array having a plurality of memory cells, each memory cell of said array having a gate region for controlling the transfer of binary information in and out of a corresponding storage region, and a bit line contact region, said array comprising:

a plurality of word lines arranged in rows each of said word lines alternately passing over the storage region of a first one of said memory cells and being electrically integral with the gate region of a second one of said memory cells; and

a plurality of bit lines arranged in columns substantially orthogonal to said word lines, memory cells being arranged along first and second parallel lines in each one of said columns;



each of said plurality of bit lines having portions extending to electrically contact memory cells arranged along said first and second parallel lines, respectively.

4,319,343

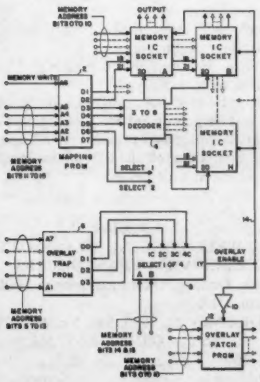
PROGRAMMABLE DIGITAL MEMORY CIRCUIT

Robert W. Powell, North Wales, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 16, 1980, Ser. No. 169,307

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—189 **6 Claims**



1. A digital memory programming circuit comprising:

a plurality of read only memory means for storing digital data at addressable locations therein,

digital data storage means for storing digital data at addressable locations therein,

circuit means for applying sequential memory addresses in parallel to all of said read only memory means and said data storage means,

control signal means for producing an enable signal for said

read only memory means and a disable signal for said digital data storage means in a first operative state and a disable signal for said read only memory means and an enable signal for said digital data storage means in a second operative state in response to an address operation by said memory address of said read only memory means, said control signal means switching between said first and second operative state for predetermined ones of said memory addresses.

4,319,344

METHOD AND CIRCUIT ARRANGEMENT FOR DISCHARGING BIT LINE CAPACITANCES OF AN INTEGRATED SEMICONDUCTOR MEMORY

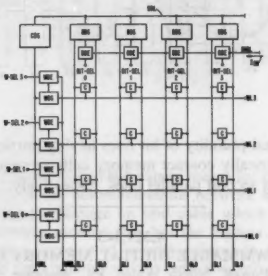
Klaus Heuber, Boeblingen, and Siegfried K. Wiedmann, Stuttgart, both of Fed. Rep. of Germany, assignors to International Business Machines Corp., Armonk, N.Y.

Filed May 30, 1980, Ser. No. 154,640

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1979, 2926094

Int. Cl.³ G11C *13/00*

U.S. Cl. 365—203 **9 Claims**



1. A memory system comprising;

a given plurality of cells,

a plurality of bit lines, each having a first plurality of cells of said given plurality of cells coupled thereto,

a common discharge switch,

means for selecting one cell of a first plurality of cells coupled to a given bit line,

accessing means for supplying during a given time period a first current to said one cell,

means for supplying to said one cell during said given time period a discharge current from said given bit line, and

means for discharging said plurality of bit lines, except said given bit line, through said common discharge switch during said given time period.

4,319,345

ACOUSTIC WELL-LOGGING TRANSMITTING AND RECEIVING TRANSDUCERS

John R. Dennis, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed May 23, 1980, Ser. No. 152,979

Int. Cl.³ G01V *1/40, 1/143*

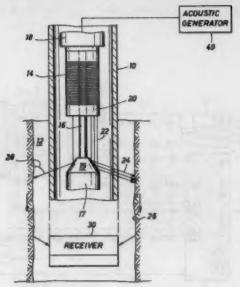
U.S. Cl. 367—25 **7 Claims**

1. A transmitting transducer for multi-directionally impinging transmitted acoustic energy into the borehole wall from a well-logging tool at preselected angles to the borehole axis for enhancing shear wave components affected by introduction of acoustic energy at such angles, comprising

a stacked array of piezoceramic rings for determining a primary frequency of operation,

at least one vibrating end piece connected to said stacked array positioned for transmitting acoustic energy longitudinally with respect to the borehole axis,

an acoustic energy reflector spaced apart from said vibrating element for receiving the longitudinally transmitted energy therefrom and reflecting said energy simultaneously in multi-directions substantially completely circumferentially into the borehole wall at a preselected angle with respect to the borehole axis, and



transducer excitation means for alternately providing impulse excitation and gated sine wave excitation to said stacked array, thereby particularly enhancing shear wave components of acoustic energy.

4,319,346

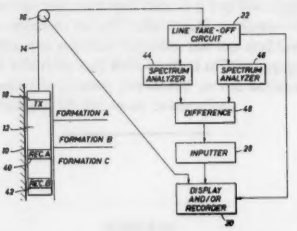
ACOUSTIC FREQUENCY SPECTRUM LOGGING

Clyde O. MacDonald, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 21, 1980, Ser. No. 142,567

Int. Cl.³ G01V *1/40, 1/30*

U.S. Cl. 367—32 **7 Claims**



1. The method of acoustically logging a borehole using an instrument sonde sized and adapted for passage through a well borehole, said sonde having an acoustic signal transmitter and first and second broad frequency spectrum acoustic receivers, said sonde being lowered and raised in the borehole by an armored well logging cable supporting said sonde and providing a transmission path to the surface from the receivers, which comprises

recording the depth of the sonde in a well borehole,

generating an acoustic signal from the transmitter included in the sonde to cause acoustical signal arrivals at the receivers,

generating a first electrical signal representative of the received acoustical signal at said first receiver and transmitting said first electrical signal to the surface by way of conductors of said logging cable,

generating a second electrical signal representative of the received acoustical signal at said second receiver and transmitting said second electrical signal to the surface by way of conductors of said logging cable,

separating said first electrical signal into multiple components by frequency to produce a first plurality of select-

able signals, each of which is representative of the amplitude of a small frequency band within the broad frequency spectrum of the first receiver,

separating said second electrical signal into multiple components by frequency to produce a second plurality of selectable signals, each of which is representative of the amplitude of the same small frequency bands within the broad frequency spectrum of the second receiver as said corresponding first plurality of selectable signals,

subtracting corresponding ones of each of said first and second plurality of selectable signals to produce a plurality of amplitude difference signals corresponding to a plurality of frequencies covering substantially the entire broad frequency spectrum of said receivers and

recording said plurality of selectable difference signals in correlation with respect to the sonde depth log.

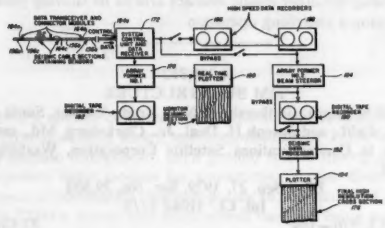
4,319,347
SEISMIC METHOD AND SYSTEM OF IMPROVED RESOLUTION AND DISCRIMINATION

Carl H. Savit, Houston, Tex., assignor to Western Geophysical Co. of America, Houston, Tex.

Continuation of Ser. No. 879,887, Feb. 21, 1978, which is a continuation of Ser. No. 665,150, Mar. 8, 1976. This application Sep. 19, 1979, Ser. No. 77,260

Int. Cl.³ G01V *1/22, 1/36*

U.S. Cl. 367—52 **26 Claims**



15. An improved seismic exploration system of the type having an elongate seismic cable including a plurality of sensors therealong for receiving reflected seismic signals, wherein the improvement comprises:

(a) means for selecting a subset of sensors from which a group signal is to be formed;

(b) means for determining the relative time delays required between the signals of the sensor in the subset as a function of reflection time to substantially eliminate the effects of moveout therebetween; and

(c) means for combining the signals in accordance with the determined delays to form a seismic trace.

4,319,348
METHOD AND APPARATUS OF SURVEYING NODULAR TARGETS ON THE SEA FLOOR

Tohru Suzuki, Machida, Japan, assignor to Sumitomo Metal Mining Company Limited, Tokyo, Japan

Filed Feb. 28, 1980, Ser. No. 125,590

Claims priority, application Japan, Feb. 28, 1979, 54-22020

Int. Cl.³ G01S *15/04*

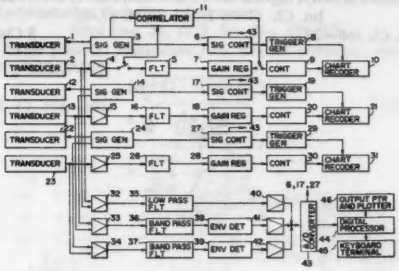
U.S. Cl. 367—87 **11 Claims**

1. A method of surveying nodular targets on the sea floor wherein the nodular targets have a grain size of 1 to 15 cm, comprising the steps of:

radiating sound waves onto the sea bottom from a ship navigating on the sea, said sound waves comprising pulse waves of three different frequencies f1, f2 and f3, wherein 3 KHz≦f1≦4 KHz, 10 KHz≦f2≦14 KHz and 25 KHz≦f3≦50 KHz;

receiving the reflected pulse sound waves of said three frequencies;

determining the respective reflexibilities from the sound pressures of said reflected sound waves;



composing said reflexibilities; and

deriving the population of said nodular targets from said composed reflexibility.

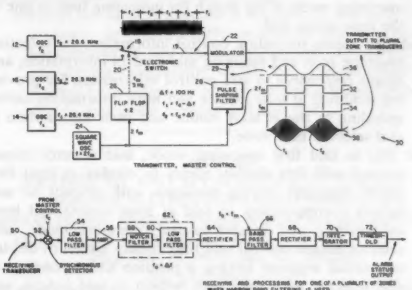
4,319,349
ULTRASONIC INTRUSION DETECTION SYSTEM

Kenneth R. Hackett, Boulder, Colo., assignor to Pittway Corporation, Northbrook, Ill.

Filed Sep. 29, 1978, Ser. No. 947,039

Int. Cl.³ G01S *13/04, 15/04;* **G08B** *13/16*

U.S. Cl. 367—94 **30 Claims**



1. An intrusion detection system for detecting the presence of moving objects in a protected area, comprising:

transmitter means for transmitting waves into the protected area, including means, responsive to a modulation frequency, for alternately transmitting waves of a first frequency and waves of a second frequency, the transmitter alternating between the first and second frequency at a rate determined by the modulation frequency;

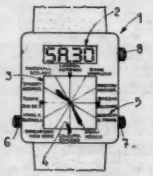
receiving means for receiving echoes resulting from reflection of the transmitted waves by objects in the protected area and for providing an output signal representative of the received signal; and

processing means responsive to the receiving means output signal for detecting frequency components in the receiving means output signal representative of doppler-shifted echoes from moving objects in the area, and for providing an alarm signal only in response to the detection of frequency components which are substantially either all above or all below the transmitted frequencies and further selectively responsive to the modulation frequency, thereby detecting objects having a net movement with respect to the receiving means which reflect said alternating first and second frequencies.

4,319,350
ELECTRONIC WATCH

Jean-Claude Fatton, Le Landeron, Switzerland, assignor to Ebauches Electroniques S.A., Neuchatel, Switzerland

Filed May 21, 1980, Ser. No. 151,779
Claims priority, application Switzerland, Jun. 1, 1979, 513479
Int. Cl.³ G04B *19/22*; G04C *17/02*
U.S. Cl. 368—22 **5 Claims**



1. An electronic watch for indicating time locally and time in one of a plurality of time zones, comprising:

time counter means for providing at least minute and hour information;

first passive electro-optic display means for indicating the provided time information in an analog form, the first display means being provided with fixed indicia indicating time and time zones, and a plurality of radial segments having positions arranged aligned with the indicia;

second passive electro-optic display means for indicating the provided time information in a digital form;

manually operable means for selecting a first operating mode of the watch for indicating time locally and a second operating mode of the watch for indicating time in one of the time zones; and

selector means providing control information for selecting one time zone and retaining said control information, and means responsive to said control information for providing modified at least minute and hour information corresponding to the at least minute and hour information in said selected time zone;

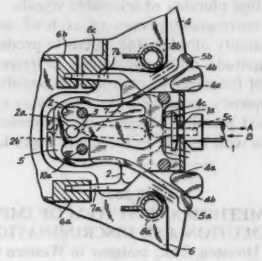
so that in said first operating mode, said selector means control said first display means to display at least two radial segments having positions with respect to said indicia corresponding to said at least minute and hour information; and in said second operating mode, said selector means control said first display means to display one radial segment having a position corresponding to said selected time zone with respect to said indicia, and said second display means to display said modified at least minute and hour information.

4,319,351
SWITCH STRUCTURE FOR A TIMEPIECE

Hiroaki Fujimori, and Shoichi Nagao, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Mar. 5, 1980, Ser. No. 127,288
Claims priority, application Japan, Mar. 6, 1979, 54/25886
Int. Cl.³ G04C *9/00*; G04B *29/00*
U.S. Cl. 368—187 **15 Claims**

1. A switch structure for an electronic timepiece having a substantially planar substrate and circuit means mounted thereon for performing measurement of actual time and at least one additional timekeeping function and display means for displaying the results of one of the timekeeping functions at a time, comprising an external operational member displaceable in at least two directions for completion of switching operations for changing-over the display means from the display of the one-timekeeping function to the display of the other timekeeping function and for placing the circuit means in a different operational mode, said external operational member operationally engaged to first switch means including a substantially planar click lever activated by displacement of said external operational member axially from a first position to a second position and second switch means including a second substantially planar switch lever selectively engageable with said external operational member when said member is rotated, said second lever being displaceable in a plane substrate parallel to the substrate said second lever having a central arm selectively pivotable by rotation of said external operating member and

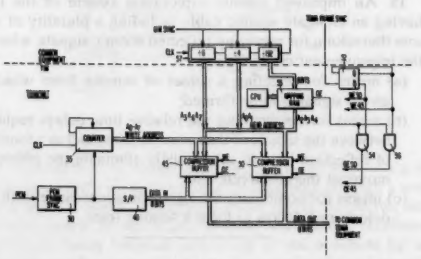


two elastic contact arms which extend on both sides of said central arm, said second switch means further including stopper means for controlling the displacement of the elastic contact arms in one direction of displacement and electrical contact means, one elastic contact arm operating as a bias for returning the other elastic contact arm to its starting position following a switching operation.

4,319,352
TIM BUS STRUCTURE

Shanti S. Gupta, Gaithersburg, Md.; Brady Warner, Santa Maria, Calif., and Joseph H. Deal, Jr., Clarksburg, Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Sep. 27, 1979, Ser. No. 79,602
Int. Cl.³ H04J *3/16*
U.S. Cl. 370—104 **22 Claims**



1. An apparatus for selectively multiplexing a plurality of data sources with equipment common to each of said data sources, comprising:

a first memory means in each of said data sources for receiving and storing input data at a data rate, said first memory, in response to an output enable signal and a plural bit read address signal, providing to said common equipment data specified by said read address signal, said read address signal having first and second portions;

counter means in said common equipment for counting at said data rate, said counter having a first section providing said first portion of said plural bit read address signal and a second section;

second memory means in each said data source, said second memory means receiving a plural bit output from said

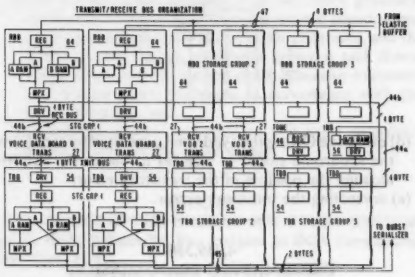
second counter section as an address input and providing a corresponding second memory output, the output of said second memory comprising said second portion of said read address signal.

4,319,353

PRIORITY THREADED MESSAGE BURST MECHANISM FOR TDMA COMMUNICATION

Joseph A. Alvarez, III, Damascus; John F. Brennen, Gaithersburg, and Robert W. Krug, Rockville, all of Md., assignors to IBM Corporation, Armonk, N.Y.

Filed Feb. 29, 1980, Ser. No. 126,080
Int. Cl.[3] H04J 7/12
U.S. Cl. 370—104 9 Claims



1. In a satellite communications system including a plurality of ground stations which intercommunicate in TDMA mode via satellite transponder, each ground station having a radio frequency burst modem for transmitting a time divided sequence of information channels during an assigned burst period of a TDMA frame, said burst period duration being assigned based on a statistical assessment of demand at each ground station, a method for minimizing the effects of message freeze-out when the actual demand at a given ground station exceeds said assigned burst duration, comprising the steps of:

dividing a plurality of digital ports connected to terrestrial signal sources into a first subplurality for transferring information having a relatively high priority and a second plurality for transmitting information having a relatively lower priority;

storing said information from said first and second subpluralities of ports in a message memory having addressable storage locations;

storing the addresses of said information stored in said message memory corresponding to said first subplurality of ports, in a first threaded address memory;

storing the addresses of said information stored in said message memory corresponding to said second subplurality of ports in a second threaded address memory;

accessing said message memory during said burst period by initially accessing with said addresses stored in said first threaded address memory and subsequently accessing with said addresses stored in said second threaded address memory;

outputting said messages stored in said message memory in an output message stream, in the order of said accessing thereof;

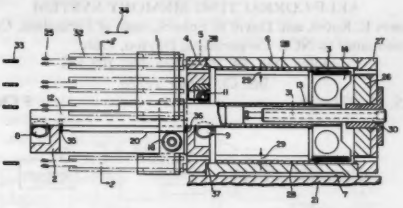
whereby said relatively high priority messages are transmitted during an early portion of said burst period and said relatively lower priority messages are transmitted during a later portion of said burst period during which truncation of said output message stream may take place.

4,319,354

DEVICE FOR POSITIONING MAGNETIC HEADS IN MEMORY PROCESSING UNITS

Klaus Manzke, Westheim; Peter Hammerschmitt, Brühl; Richard Schneider, Heidelberg, and Karl Uhl, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 31, 1979, Ser. No. 108,465
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1979, 7900695[U]
Int. Cl.[3] G11B 21/08
U.S. Cl. 360—106 7 Claims



1. A device for positioning one or more magnetic heads over pre-selected tracks on magnetic disks in a memory processing unit having a chassis, the device comprising a linear electric motor having a moving coil within a stationary, partially hollow magnetic device, a support member, a guide member which carries said coil and at least one head mount means mounting said guide means on the support member for axial movement wherein the movement of the coil is axially limited to the confines of the magnetic device,

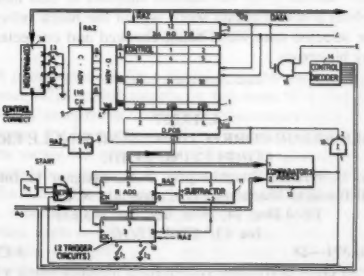
wherein the support member is mounted at one end of said magnetic device in cantilever fashion and is otherwise unsupported by said chassis, and extends outwardly from said device substantially within the cross-sectional area defined by the diameter of said coil and in coaxial relationship to said guide member and said coil.

4,319,355

METHOD OF AND APPARATUS FOR TESTING A MEMORY MATRIX CONTROL CHARACTER

Jean H. Mollier, Bougival, France, assignor to Compagnia Internationale pour l'Informatique, Paris, France

Filed Dec. 28, 1979, Ser. No. 108,335
Int. Cl.[3] G01R 31/28
U.S. Cl. 371—21 18 Claims



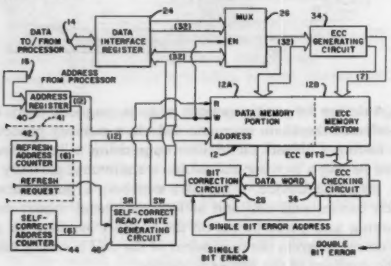
1. Apparatus for testing a control character having a predetermined binary code stored in a control zone of an erasable memory matrix, said matrix including a plurality of data storage zones, all of said zones including plural erasable memory cells for binary bit values, the control character being stored in the control zone to assure the integrity of data stored in the

data zones of the memory, comprising control means coupled to the memory matrix for reading out the binary values stored in the cells of the control zone and for prohibiting writing binary values into the cells of the control zone, and means responsive to the control means for comparing the bit values read out of the cells in the control zone with predetermined bit values for the control zone cell bit values, the predetermined bit values being dependent upon the predetermined binary code.

4,319,356
SELF-CORRECTING MEMORY SYSTEM

James E. Kocol, and David B. Schuck, both of Escondido, Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 19, 1979, Ser. No. 105,185
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—38 **5 Claims**



1. A memory system, comprising:

a dynamic memory with a refresh cycle, said memory including a first memory portion for storing a plurality of data words and a second memory portion for storing groups of check bits, one group of check bits associated with each data word in said first memory portion;

control circuitry for controlling the operation of said memory, including a refresh address counter for periodically supplying an address to said memory to refresh a block of the data words stored in said first memory portion; and

error detection and correction means connected to said memory for periodically checking for and correcting any bit errors in each of the data words stored in said first memory portion, including a self-correct address counter augmenting said refresh address counter so that during each refresh cycle the address supplied to said memory defines a selected data word within the block refreshed, the selected data word being checked and corrected for any bit errors.

4,319,357
DOUBLE ERROR CORRECTION USING SINGLE ERROR CORRECTING CODE

Douglas C. Bossen, Poughkeepsie, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

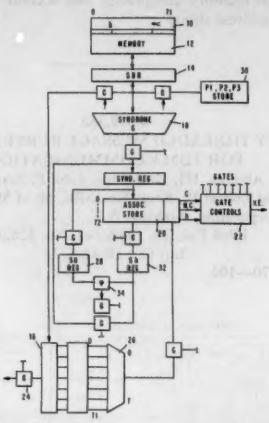
Filed Dec. 14, 1979, Ser. No. 103,633
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—38 **3 Claims**

1. In an error correcting system for a memory using a ECC code capable of correcting a single error and detecting a double error, a method for correcting a word which has one fixed error and one transitory error comprising the steps of:

(a) saving the data and syndrome generated by the ECC code circuitry for said word;

(b) determining the location of said one hard error using an ancillary error location technique;

(c) generating a syndrome for said word assuming only a single error in the location determined by (b);



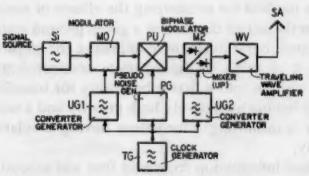
(d) exclusive ORing the syndrome generated by step (c) with the syndrome stored in step (a) to obtain the syndrome locating the position of the transitory error;

(e) correcting the transitory errror.

4,319,358
INFORMATION TRANSMISSION

Hermann Sepp, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 23, 1975, Ser. No. 625,536
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1974, 2450727
Int. Cl.³ H04K *1/00*; H04B *1/10*
U.S. Cl. 375—1 **2 Claims**



1. An arrangement for information transmission in which at the transmitting end a band spread is effected with a pseudo-noise sequence and at the receiving end the band spread is cancelled by an identical pseudo-noise sequence prior to actual demodulation, said arrangement comprising:

transmitting means including

an input signal source,

first modulator means connected to said source to modulate input signals,

band spread means connected to said first modulator means, including a first pseudo-noise generator for causing a band spread of the modulated input signal,

an upwards mixer connected to said band spread means,

a first converter generator connected to said upwards mixer to provide carrier thereto, and

a first clock generator connected to and controlling said pseudo-noise generator and said first converter generator,

said first converter generator comprising a low frequency oscillator, a further mixer, a frequency multiplier con-

nected to said first clock generator and to said further mixer, a Gunn oscillator connected to said further mixer, the outputs of said Gunn oscillator and said frequency multiplier mixed in said further mixer to form a difference signal, a phase comparator connected to said low frequency oscillator and to said mixer to compare the low frequency oscillations and the difference signal to produce a control signal, said Gunn oscillator including a frequency control input connected to said phase comparator to receive said control signal; and

receiving means including

a downwards mixer for receiving the band spread transmitted signals and transforming received signals to an intermediate frequency level,

a second converter generator connected to said downwards mixer for providing carrier thereto,

band spread cancellation means connected to said downwards mixer including a second pseudo-noise generator, for causing cancellation of the band spread,

synchronizing means including a second clock generator connected to and controlling said second pseudo-noise generator and said second converter generator, and the synchronizing circuit connected between said downwards mixer and said second clock generator to control said second clock generator in accordance with the received signals, and

demodulation means connected to said third modulator means to recover the input signals.

4,319,359

RADIO TRANSMITTER ENERGY RECOVERY SYSTEM

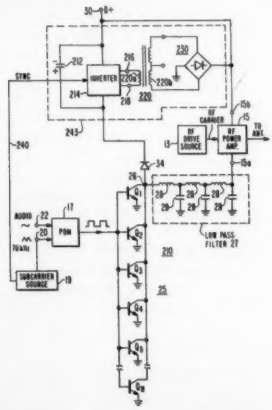
Roger E. Wolf, Bridgeville, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 8, 1980, Ser. No. 147,575

Claims priority, application United Kingdom, Apr. 10, 1980, 11868/80

Int. Cl.³ H03K *7/08*

U.S. Cl. 375—22 **5 Claims**



1. An improved AM generator for producing a carrier signal modulated with intelligence from an intelligence signal source, comprising:

a pulse-width modulation means coupled to said source of intelligence signals for producing recurrent bilevel pulses the duration of which depends upon said intelligence;

controllable switch means coupled to said pulse-width modulation means for controlling the impedance of a controlled main current path of said controllable switch means in first and second states in response to said bilevel pulses, said first state being high impedance and said second state being low impedance;

a radio-frequency modulator having first and second terminals for producing radio-frequency signals at an amplitude dependent upon the energizing level applied across said first and second terminals;

an energizing source;

inductive means coupling said first and second terminals of said radio-frequency modulator, said energizing source and said controlled current path in a series path for the flow of current, said inductive means developing a voltage pulse during said first state;

offset voltage generating means;

threshold switching means coupled to said inductive means and to said offset voltage generating means for allowing current flow in said offset voltage generating means for controlling the voltage at said inductive means in such a manner as to reduce distortion of the modulation of said carrier signal by said intelligence when the duration of said second state is low;

wherein the improvement lies in that said offset voltage generating means comprises energy storage means coupled to a point of reference potential for storing energy as a result of said current flow in said offset voltage generating means; and

wherein said offset voltage generator further comprises energy coupling means for coupling energy from said storage means to said source of energizing potential.

4,319,360

PREDICTOR STAGE FOR A DIGIT RATE REDUCTION SYSTEM

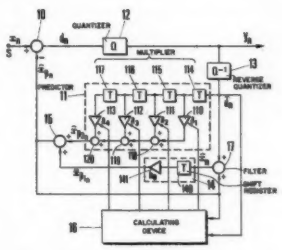
Denis F. Cointot, Paris, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Mar. 17, 1980, Ser. No. 131,235

Claims priority, application France, Nov. 30, 1979, 79 29471

Int. Cl.³ H03K *13/22*

U.S. Cl. 375—27 **6 Claims**



1. A predictor stage for a digital processing system for sampled and PCM coded signals, in the form of a sequence of samples x_n, comprising first transmission means and first reception means for forming a predicted sample x_{pn}, second transmission means for subtracting said sample x_{pn} predicted from said sample x_n coming in at the transmission side, and deriving therefrom a difference sample d_n representing the prediction error, wherein said first transmission means has a recursive structure, each predicted sample x_{pn} being derived from the samples d_n, d_{n-1}, d_{n-2} . . . etc. previously obtained at the output of said second transmission means, and said first reception means has a transverse structure, each sample x_{pn} being derived at the reception side from the difference samples d_n, d_{n-1} . . . , previously received, said samples x_{pn} predicted at the reception side being added to said difference samples within second reception means.

DESIGN PATENTS

GRANTED MAR. 9, 1982

ERRATA

For CLASS	See PATENT NO.
D06–061	263,276
D34–029	263,292
D32–031	263,304

DESIGN PATENTS

GRANTED MAR. 9, 1982

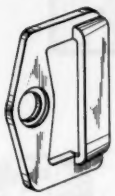
ERRATA

For	See
CLASS	PATENT NO.
D96-081	262,578
D24-029	262,342
D45-021	262,564

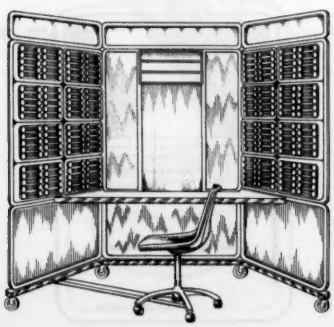
DESIGNS

MARCH 9, 1982

263,260
PANTS FASTENER ELEMENT
Edward K. Heil, Southington, Conn., assignor to U.S. Industries Inc. (Rau Fastener div.), Providence, R.I.
Filed Feb. 19, 1980, Ser. No. 122,721
Term of patent 14 years
Int. Cl. D2—*99*
U.S. Cl. D2—405

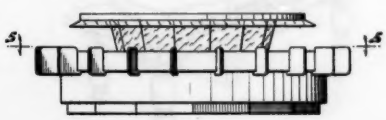


263,261
AUDIO-VISUAL CENTER
Sheldon Rutter, New York, N.Y., assignor to Roger R. Sullivan, Inc., El Monte, Calif.
Filed May 4, 1979, Ser. No. 36,111
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—42

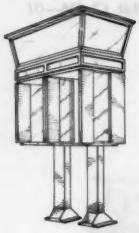


263,262
CHAIR
Rud Thygesen, Rungsted, and Johnny Sorensen, Helsingor, both of Denmark, assignors to Rudd International Corporation, Washington, D.C.
Filed Jun. 4, 1979, Ser. No. 45,259
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—66

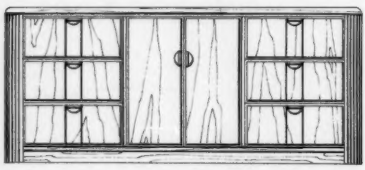
263,263
COMBINED ROTATING CAFETERIA TYPE FOOD SERVICE COUNTER AND CAP
Donald R. Barnhill, Hamilton, Ohio, assignor to B & W Metals Company, Inc., Fairfield, Ohio
Filed Aug. 6, 1979, Ser. No. 64,483
Term of patent 14 years
Int. Cl. D6—*03, 04*
U.S. Cl. D6—146



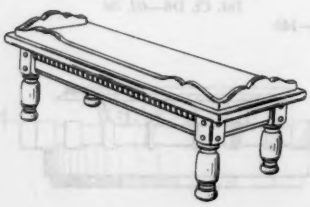
263,264
COMBINED TELEPHONE BOOTH AND ADVERTISING DISPLAY UNIT
James R. George, 91 Pine St., Garden City, N.Y. 11530, and William L. Schuyler, Rte. 1, Box 208, Denton, Md. 21629
Filed Aug. 9, 1979, Ser. No. 65,054
Term of patent 14 years
Int. Cl. D25—*03;* D20—*02;* D26—*03*
U.S. Cl. D6—157



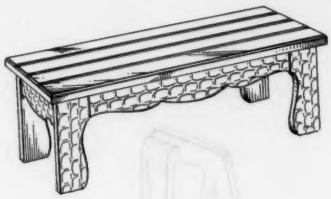
263,265
DRESSER
Eugene P. Henley, Jr., 233 N. Spring St., Greensboro, N.C. 27401
Filed Feb. 13, 1980, Ser. No. 121,127
Term of patent 3½ years
Int. Cl. D6—*04*
U.S. Cl. D6—164



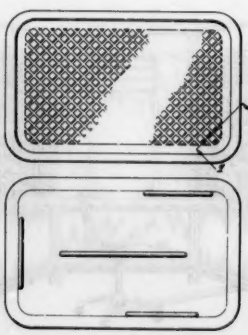
263,266
TABLE
Richard G. Brown, High Point, N.C., assignor to Null Manufacturing Corporation, Maiden, N.C.
Filed Feb. 27, 1980, Ser. No. 124,980
Term of patent 7 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



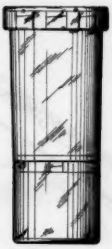
263,267
TABLE
Richard G. Brown, High Point, N.C., assignor to Null Manufacturing Corporation, Maiden, N.C.
Filed Feb. 27, 1980, Ser. No. 125,027
Term of patent 7 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

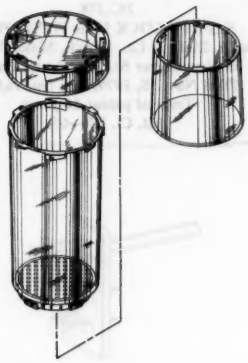


263,268
OVEN HEATED TRAY
Walter C. Rein, Northridge, Calif., assignor to Chartwell Corporation, Los Angeles, Calif.
Filed Sep. 4, 1979, Ser. No. 72,133
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—37

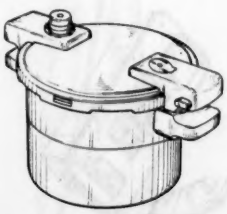


263,269
SHAKER FOR SEPARATING SEEDS
Arthur Strathman, 2880 S. Locust, Denver, Colo. 80222
Filed Mar. 24, 1980, Ser. No. 133,312
Term of patent 14 years
Int. Cl. D07—*04;* D27—*99*
U.S. Cl. D7—47

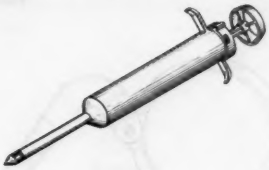




263,270
PRESSURE COOKER
Bernard Pauty, Fontaine les Dijon, France, assignor to SEB S.A., Selongey, France
Filed Nov. 2, 1979, Ser. No. 91,475
Claims priority, application France, May 14, 1979, 79 159
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—86

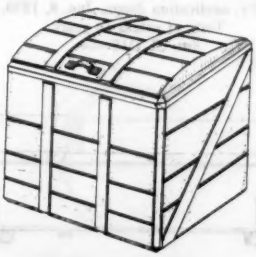


263,271
FLAVOR INJECTOR FOR FOODS
Robert M. Kalb, 121 Pine St., Oneida, Ill. 61467
Filed Feb. 28, 1980, Ser. No. 125,689
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—106

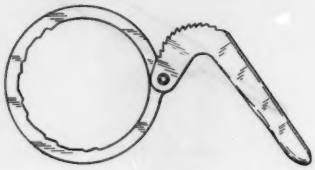


263,272
FORK
Peter C. Jagger, Hong Kong, Hong Kong, assignor to Little People Limited, Hong Kong, Hong Kong
Filed Feb. 1, 1980, Ser. No. 117,537
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137

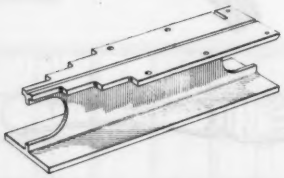
263,273
WOOD STORAGE BIN
Thomas E. Douglas, Reidsville, and Edward D. Wooten, Eden, both of N.C., assignors to Zarn, Inc., Reidsville, N.C.
Filed Aug. 20, 1979, Ser. No. 67,827
Term of patent 7 years
Int. Cl. D7—*08*
U.S. Cl. D7—212



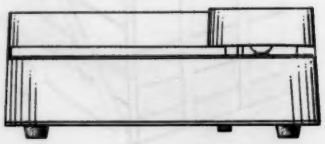
263,274
TORQUE APPLYING TOOL
Basil J. Hastings, Birmingham, England, assignor to T. Williams (Drop Forgings & Tools) Limited, Birmingham, England
Filed Aug. 14, 1978, Ser. No. 933,731
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—18



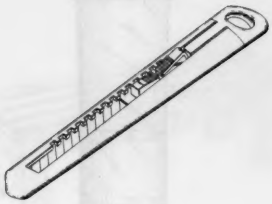
263,275
ANVIL
Ludger D'Amour, 5815 Arthur Chevrier, Montreal, Canada
Filed Oct. 9, 1979, Ser. No. 82,654
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—46



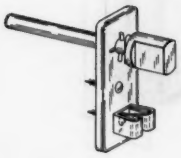
263,276
LETTER OPENER
Reiji Takagi, c/o Kabushiki Kaisha Meiko Shokai of 9, Kanda Tsukasa-Cho 2-Chome, Chiyoda-Ku, Tokyo, Japan
Filed Dec. 6, 1979, Ser. No. 100,853
Claims priority, application Japan, Jun. 8, 1979, 54-23677
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D8—61



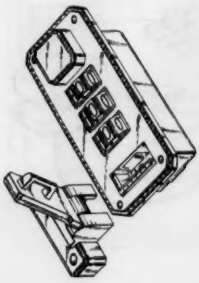
263,277
KNIFE WITH BREAKABLE BLADES
Bernard Gregoire, Berthierville, Canada, assignor to A. Richard Ltd., Berthierville, Canada
Filed Jan. 7, 1980, Ser. No. 110,236
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99



263,278
SAFETY LOCK FOR WINDOWS
James J. Toohil, 23 Trull La., Lowell, Mass. 01852, and Harry R. Carey, 55 New Carver St., Raynham, Mass. 02768
Filed Nov. 15, 1979, Ser. No. 94,863
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—331



263,279
COMBINATION LOCK
Edward M. Stolarz, Yorktown Heights, N.Y., assignor to Presto Lock Company, Division of Walter Kidde & Company, Inc., Garfield, N.J.
Filed Nov. 29, 1977, Ser. No. 855,917
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—338

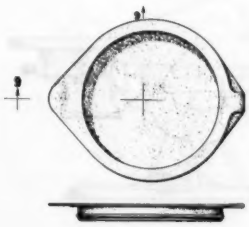


263,280
TRANSVERSELY POSITIONABLE TIE-DOWN BRACKET FOR AN ARTICLE CARRIER
Ray G. Mareydt, Warren, Mich., assignor to Four Star Corporation, Troy, Mich.
Filed May 8, 1979, Ser. No. 37,223
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—382

263,281
PERFUME BOTTLE
Douglas B. Smith, Larchmont, N.Y., assignor to Avon Products, Inc., New York, N.Y.
Filed Feb. 6, 1980, Ser. No. 118,934
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—377

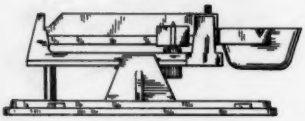
263,282
BOTTLE
George G. Jacobson, Tacoma, Wash., assignor to Northwest Containers, Inc., Tacoma, Wash.
Filed Mar. 10, 1980, Ser. No. 128,639
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—404

263,283
DISPENSING CAP
Walter M. Ronayne, Westfield, N.J., assignor to American Home Products Corporation, New York, N.Y.
Filed Jul. 19, 1979, Ser. No. 59,095
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—449

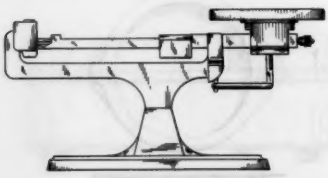


263,284
DESIGN FOR A CLOCK
John McEntee, 1116 Havenhurst Dr., Brea, Calif. 92621
Filed Mar. 21, 1980, Ser. No. 132,693
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—6

263,285
WEIGHT SCALE
Arthur Strathman, Denver, Colo., assignor to Magic Dragon Enterprises, Westminster, Colo.
Filed Mar. 24, 1980, Ser. No. 132,877
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—90



263,286
BEAM SCALE
Arthur Strathman, 2880 S. Locust, Denver, Colo. 80222
Filed Mar. 25, 1980, Ser. No. 133,686
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—90



263,287
COMBINATION REFLECTOR AND LENS
James E. Maxeiner, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Jun. 28, 1979, Ser. No. 53,073
Term of patent 14 years
Int. Cl. D10—*06*; D26—*05*
U.S. Cl. D10—111

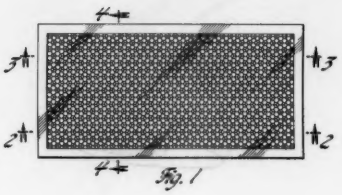


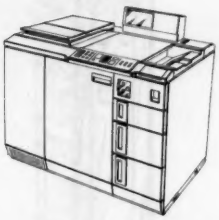
Fig. 1

263,288
NECKLACE
John A. Errigo, 23 Squires Ave., Endicott, N.Y. 13760
Filed Feb. 22, 1979, Ser. No. 13,890
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—8

263,289
ELECTROSTATIC COPIER

Yasuyoshi Onoue, Yokohama, and Masatoshi Mikami, Machida, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 10, 1980, Ser. No. 129,016
Claims priority, application Japan, Sep. 12, 1979, 54-38397
Term of patent 7 years
Int. Cl. D16—*03*
U.S. Cl. D11—30



263,290
CHRISTMAS FESTOON OR SIMILAR ARTICLE

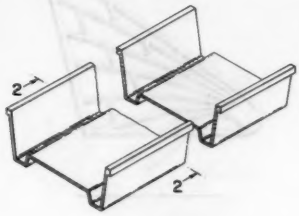
Thelma B. Troyer, 538 Monkton Rd., Monkton, Md. 21111

Filed Jul. 31, 1979, Ser. No. 62,491
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—119

263,291
TROUGH FOR PLANTERS OR THE LIKE

Frederick W. Paton, Oakapple, Yaldhurst La., Pennington, Lymington, Hampshire, England

Filed Jul. 23, 1979, Ser. No. 59,885
Claims priority, application United Kingdom, Feb. 6, 1979, 988436/79
Term of patent 14 years
Int. Cl. D11—*02*; D25—*01*
U.S. Cl. D11—143



263,292
CHAIN LINK FOR A CONVEYOR CHAIN

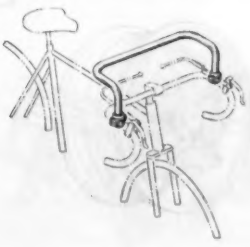
Arthur J. Brooks, Milwaukee; William G. Hodlewsky, Greendale, and Roger H. Schroeder, Hartland, all of Wis., assignors to Rexnord Inc., Milwaukee, Wis.

Filed Jul. 26, 1979, Ser. No. 60,713
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D34—29

263,293
AUXILIARY BAR FOR ATTACHMENT TO A BICYCLE HANDLE BAR

Paul M. Janson, 8756 Darby Ave., Northridge, Calif. 91325

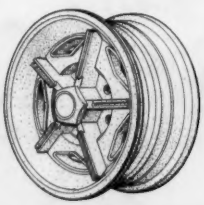
Filed Jun. 18, 1979, Ser. No. 49,946
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—178



263,294
GRILL FOR A VAN WINDOW
Robert J. Kaplus, 4 Pewter La., New Providence, N.J. 07974, and Vincent Marchetti, 12 William St., Kearny, N.J. 07032
Filed Dec. 22, 1978, Ser. No. 972,412
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—183

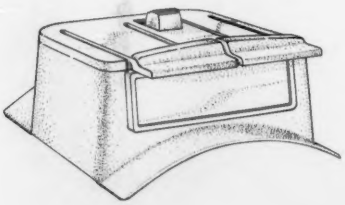
263,295
AUTOMOTIVE REAR VIEW MIRROR OR SIMILAR ARTICLE
Henry D. Lauve, Troy, Mich., assignor to Electric Fuel Propulsion Corp., Troy, Mich.
Filed Oct. 23, 1979, Ser. No. 87,625
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187

263,296
WHEEL
Russell O. Blanchard, Marshall; Joseph Guzek, Lansing, and Donald A. Matt, Bath, all of Mich., assignors to Motor Wheel Corporation, Lansing, Mich.
Filed Jan. 18, 1979, Ser. No. 4,346
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—209



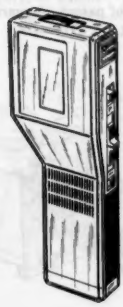
263,297
IN-LINE LAMP DIMMER
Robert H. Pintell, New City, N.Y., assignor to Interelectronics Corporation, Congers, N.Y.
Filed May 31, 1979, Ser. No. 44,033
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—12

263,298
STEERING COLUMN MOUNTED CONTROL SWITCH
Robert H. Proctor, Grand Prairie; Harris F. Payne, and Franklin W. Powell, both of Arlington, all of Tex., assignors to The Texstar Corporation, Grand Prairie, Tex.
Filed Jan. 31, 1980, Ser. No. 117,267
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D13—32

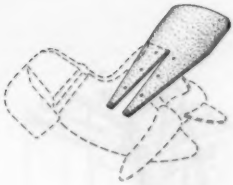


263,299
PENDENT ENCLOSURE FOR ELECTRICAL DEVICES SUCH AS PUSH BUTTON SWITCHES
Bruce E. Jacobs, 6909 Dartmouth, University City, Mo. 63130
Filed Aug. 30, 1979, Ser. No. 70,962
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—38

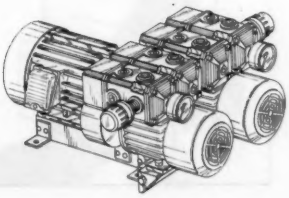
263,300
DICTATING MACHINE
Jozef J. Waagen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 8, 1979, Ser. No. 47,184
Claims priority, application Benelux Designs Conv., Dec. 14, 1978, 53260-00
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—3



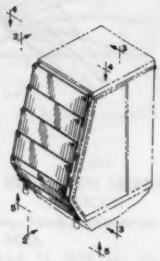
263,301
BOAT PLANING INDUCING ATTACHMENT FOR MARINE OUTBOARD MOTORS AND MARINE INBOARD/OUTBOARD POWER UNITS
Charles R. McEvoy, Marina City Pl., East Dubuque, Ill. 61025
Filed Mar. 10, 1980, Ser. No. 128,623
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D15—4



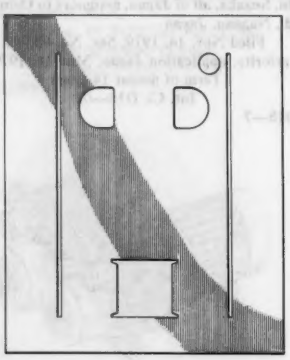
263,302
VACUUM PUMP
Teruo Terajima, Suzaka; Kiyoshi Tagawa, Nagano, and Ikuo Takeuchi, Suzaka, all of Japan, assignors to Orion Machinery Co., Ltd., Nagano, Japan
Filed Nov. 14, 1979, Ser. No. 93,992
Claims priority, application Japan, May 16, 1979, 54-20009
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7



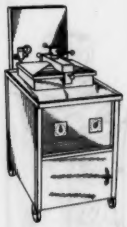
263,303
SECTIONALIZED PANEL AND COWL FOR COVERING A WINDSHIELD
Roger S. Allshouse, Plainfield, and Donald C. Marek, Hickory Hills, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Dec. 20, 1979, Ser. No. 106,062
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—28



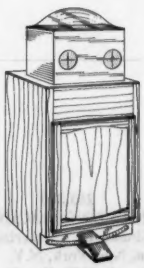
263,304
SKIN FOR VACUUM SWEEPER
Robert W. Russell, 1508 Lincolnway West, Osceola, Ind. 46561
Filed Feb. 6, 1980, Ser. No. 119,173
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—31



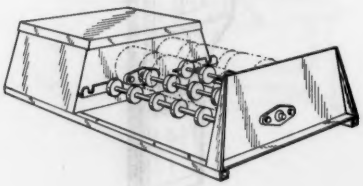
263,305
PRESSURE COOKER
Donald R. Barnhill, Hamilton, Ohio, assignor to B&W Metals Company, Inc., Fairfield, Ohio
Filed Aug. 20, 1979, Ser. No. 67,826
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—104



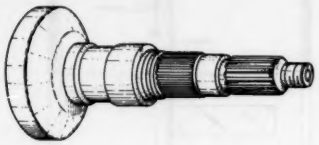
263,306
DRY BLAST CABINET
Jerome D. Shulec, Grosse Pointe Farms; William Boyle, Grosse Pointe Woods, and Kenneth J. Motyl, Warren, all of Mich., assignors to Trinity Tool Company, Warren, Mich.
Filed Oct. 27, 1978, Ser. No. 955,382
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—124



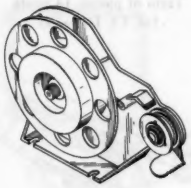
263,307
PAINT MIXER FOR MIXING CYLINDRICAL CANS OF PAINT
J. Ray Collins, 806 N. Plum, Hutchinson, Kans. 67501
Filed Jan. 17, 1980, Ser. No. 113,088
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—147



263,308
FOUR-WHEEL DRIVE TRANSFER CASE SHAFT EXTENDER
George F. Miller, Franklin, Tenn., assignor to Doug Nash Equipment & Engineering, Inc., Franklin, Tenn.
Filed Oct. 1, 1979, Ser. No. 80,422
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—148

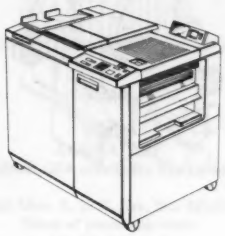


263,309
DISPENSER AND APPLICATOR APPARATUS FOR WRAPPING OF STAINED GLASS WITH FOIL
John Cotey, 27 W. End Ave., Haddonfield, N.J. 08033; Russell W. Evans, 85 Elm Tree Rd., Hamburg, N.Y. 14075, and Ralph M. Evans, 2900 S. Broad St., Philadelphia, Pa. 19145
Filed Feb. 11, 1980, Ser. No. 120,726
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—199

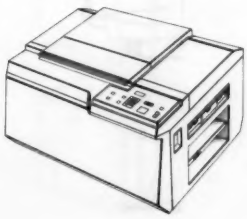


263,310
SINGLE LENS REFLEX CAMERA
Takaharu Kato, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Feb. 1, 1980, Ser. No. 117,627
Claims priority, application Japan, Feb. 8, 1979, 54-32358
Term of patent 7 years
Int. Cl. D16—*01*
U.S. Cl. D16—8

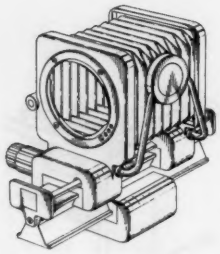
263,311
ELECTROSTATIC COPIER
Tetuya Goto, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Mar. 10, 1980, Ser. No. 128,642
Claims priority, application Japan, Sep. 12, 1979, 54-38396
Term of patent 7 years
Int. Cl. D16—*03*
U.S. Cl. D16—30



263,312
ELECTROSTATIC COPIER
Kenichi Nakade, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Mar. 10, 1980, Ser. No. 129,017
Claims priority, application Japan, Sep. 12, 1979, 54-38398
Term of patent 7 years
Int. Cl. D16—*03*
U.S. Cl. D16—31

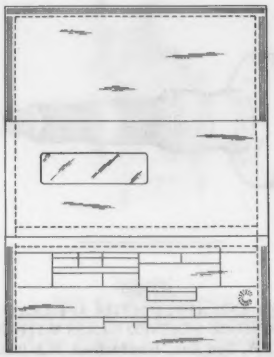


263,313
PHOTOGRAPHIC CLOSE UP SETTING APPARATUS
Reinhard Voigt, and Siegfried Zeibig, both of Dresden, German Democratic Rep., assignors to VEB Pentacon Dresden Kamera-und Kinowerke, Dresden, German Democratic Rep.
Filed Jun. 20, 1979, Ser. No. 50,251
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—38

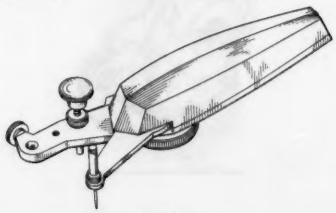


263,314
MARKING MACHINE
Thomas M. Caldwell, Cincinnati, Ohio, assignor to Natmar, Inc., Cincinnati, Ohio
Filed Dec. 14, 1979, Ser. No. 103,481
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D18—13

263,315
THREE SECTION ENVELOPE BLANK
Nils E. Petersson, Nybro, Sweden, assignor to AB Sture Ljungdahl, Nybro, Sweden
Filed Feb. 2, 1979, Ser. No. 8,785
Claims priority, application Sweden, Aug. 3, 1978, 78–1798
Term of patent 3½ years
Int. Cl. D19—*01*
U.S. Cl. D19—3



263,316
CONTROLLED LETTERING SCRIBER
Allister L. Baker, Denville, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.
Filed May 23, 1980, Ser. No. 152,928
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—41

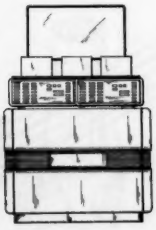


263,317
PEN
Torsten Swensson, 76 Västmannagatan, 113 26 Stockholm, Sweden
Filed Jul. 5, 1979, Ser. No. 55,101
Claims priority, application Sweden, Jan. 5, 1979, 79 00 34
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—46

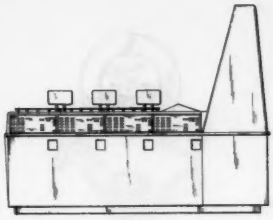
263,318
PEN OR SIMILAR ARTICLE
Shigeo Oka, Tokyo, Japan, assignor to Pentel Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 28, 1980, Ser. No. 144,638
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—51

263,319
DISPLAY CARD HOLDER
Bernard E. Shuman, Merrick, N.Y., assignor to Eastern Electrical Equipment Co., Inc., Hicksville, N.Y.
Filed Mar. 12, 1980, Ser. No. 129,415
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D20—40

263,320
TWO PLAYER VIDEO GAMBLING MACHINE
James H. Muir, Indialantic, Fla., assignor to Video Turf Incorporated, New York, N.Y.
Filed Feb. 22, 1980, Ser. No. 123,676
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13

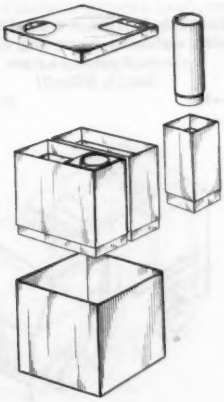


263,321
EIGHT PLAYER VIDEO GAMBLING MACHINE
James H. Muir, Indialantic, Fla., assignor to Video Turf Incorporated, New York, N.Y.
Filed Feb. 22, 1980, Ser. No. 123,677
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



263,322
AERIAL TOY
Normand A. Godbout, 284 Alexandre St., Laval, Quebec, Canada
Filed Mar. 6, 1978, Ser. No. 884,050
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—88

263,323
COMBINED PUZZLE AND CONSTRUCTION TOY
Danny E. Simpson, Baltimore, Md.; John P. Johnson, Hopewell, N.J., and David M. Williams, Montreal, Canada, assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.
Filed Nov. 19, 1979, Ser. No. 95,827
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—107



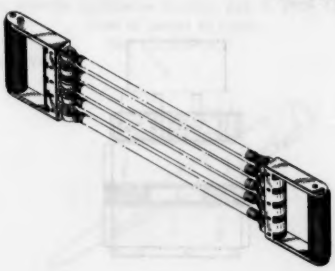
263,324
TOY CONSTRUCTION PIECE
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Oct. 22, 1979, Ser. No. 87,081
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—108

263,325
TOY FOLDING FIRETRUCK
Shinichi Kanaoki, c/o 9-10 Tateishi, 7-Chome, Katsushika-ku, Tokyo, Japan
Filed Feb. 25, 1980, Ser. No. 124,246
Claims priority, application Japan, Aug. 27, 1979, 54-35691
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—128

263,326
JUMP ROPE
Marvin Cooper, New Rochelle, N.Y., assignor to Dynamic Classics, Ltd., New York, N.Y.
Filed May 7, 1980, Ser. No. 147,513
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—191

263,327
EXERCISE BAR
Marvin Cooper, New Rochelle, N.Y., assignor to Dynamic Classics, Ltd., New York, N.Y.
Filed May 7, 1980, Ser. No. 147,515
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—191

263,328
ADJUSTABLE CHEST EXPANDER EXERCISER
Marvin Cooper, New Rochelle, N.Y., assignor to Dynamic Classics, Ltd., New York, N.Y.
Filed May 7, 1980, Ser. No. 147,514
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—198



263,329

HOCKEY GOAL-TENDER'S STICK

Lorne F. Clayton, 24 Fairbank Ave., Toronto, Ontario, Canada (M6C 3Y4)

Filed Apr. 3, 1980, Ser. No. 137,014
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—210

263,330

GOLF CLUB SHAFT

Eugene Kaugars, and George A. Ossola, both of Torrington, Conn., assignors to Brunswick Corporation, Skokie, Ill.

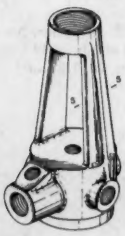
Filed Sep. 7, 1979, Ser. No. 73,450
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—221

263,331

SPRAY NOZZLE BODY

William G. Parker, West Byfleet, England, assignor to Wilson & Scott (Highways) Ltd., Surrey, Great Britain

Filed May 29, 1979, Ser. No. 43,485
Claims priority, application United Kingdom, Mar. 15, 1979, 989067
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35

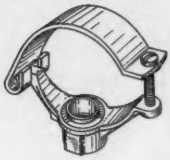


263,332

BRACKET FOR SUPPORTING A SPRINKLER HEAD

Ted L. Butterfield, Naperville, Ill., assignor to Spraying Systems Company, Wheaton, Ill.

Filed Mar. 3, 1980, Ser. No. 126,977
Term of patent 14 years
Int. Cl. D23—*01;* D8—*08*
U.S. Cl. D23—45



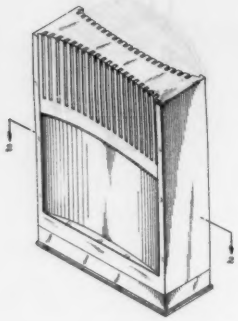
263,333

FIREBOX INTAKE DOOR

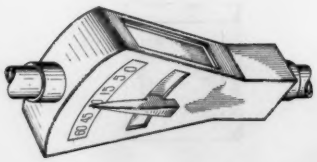
Michael J. Donohue, 5681 Reinhold St., Fair Oaks, Calif. 95628

Filed Sep. 21, 1979, Ser. No. 77,785
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—128

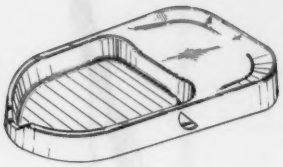
263,334
AIR FRESHENER
Georg Schimanski, Hagen, Fed. Rep. of Germany, assignor to Globol-Werk GmbH, Fed. Rep. of Germany
Filed Jul. 5, 1979, Ser. No. 55,024
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1979, 7908184
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



263,335
FLOW CONTROL DEVICE, OR THE LIKE
Albert F. Bujan, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Dec. 26, 1979, Ser. No. 107,008
Term of patent 14 years
Int. Cl. D24—*02;* D10—*04*
U.S. Cl. D24—8

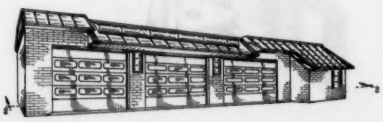


263,336
COMBINATION OBSTETRICAL SUPPORT AND RECEPTACLE
Irene L. Nielsen, 31983 Emerson La., Cottage Grove, Oreg. E-GON 97424
Filed Jan. 6, 1978, Ser. No. 867,624
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—56

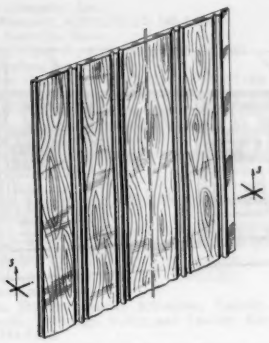


263,337
OXYGEN HUMIDIFIER
Richard E. Hart, William C. Biehl, both of Huntington Beach, Calif., assignor to Davco Chemicals & Plastics, Huntington Beach, Calif.
Filed Feb. 11, 1980, Ser. No. 120,088
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—62

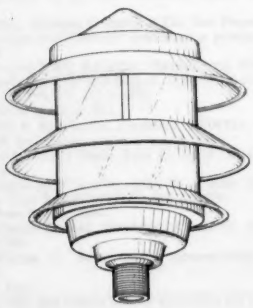
263,338
BUILDING FOR LUBRICATING AND OIL SERVICING OF AUTOMOTIVE VEHICLES
Larry C. Haak, 22929 Burnham Ave., Chicago Heights, Ill. 60411
Filed Oct. 2, 1979, Ser. No. 81,053
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—25



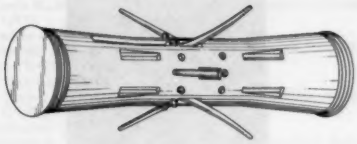
263,339
WALL PANELING
Stephen J. Tellman, Patterson, N.Y., assignor to Champion International Corporation, Stamford, Conn.
Filed Mar. 12, 1979, Ser. No. 19,847
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—85



263,340
GARDEN LIGHT FIXTURE
William F. Budnovitch, Summit; Salvatore C. Petralia, Sayreville, and Louis F. Silvestris, Bayonne, all of N.J., assignors to Keene Corporation, Union, N.J.
Filed May 30, 1979, Ser. No. 43,666
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D26—67



263,341
CURLER
Harry Sundin, Karlshamn, Sweden, assignor to AB Karlshamns Plastindustri, Karlshamn, Sweden
Filed Oct. 12, 1978, Ser. No. 951,135
Claims priority, application Sweden, Apr. 20, 1978, 781104
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—37



263,342
CURTAIN MATERIAL
Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed Jun. 18, 1980, Ser. No. 160,812
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 1354/79
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 PP

263,343

CURTAIN MATERIAL

Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland

Filed Jun. 18, 1980, Ser. No. 160,813

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 1354/79

Term of patent 14 years

Int. Cl. D5—*05*

U.S. Cl. D92—1 K

263,344

TELLER MACHINE WALL UNIT OR THE LIKE

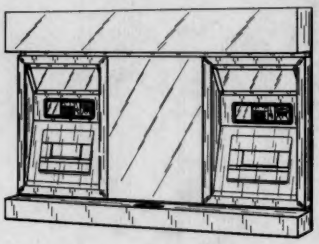
Michael McCarthy, Brooklyn; Paul Vieyra, New York; Henry Feldman, New York; John Murphy, New York, and Michael Kaminski, Woodside, all of N.Y., assignors to The Chase Manhattan Bank, New York, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,703

Term of patent 14 years

Int. Cl. D99—*00*

U.S. Cl. D99—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF MARCH, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Dick Company: *See*—
Keur, Robert I., 4,319,251, Cl. 346-1.100.

A. Finkl & Sons Co.: *See*—
Lehman, Albert L., 4,318,739, Cl. 75-124.000.

AAI Corporation: *See*—
Chandler, Charles E., 4,318,342, Cl. 102-207.000.

Aaltonen, Olli; and Alkio, Martti, to Technical Research Centre of Finland. Process for producing regenerated cellulosic articles and for recovering the solvent chemicals. 4,319,023, Cl. 536-57.000.

AB Svenska Flaktfabriken: *See*—
Larsson, Bertil S. W.; Bokfors, Stefan J. A.; and Olsson, Karl G., 4,318,643, Cl. 406-14.000.

AB Volvo: *See*—
Hogberg, Anders T. V., 4,318,708, Cl. 23-230.00R.

Abbott Laboratories: *See*—
Martin, Jerry R.; Tadanier, John S.; and Collum, Paulette, 4,319,022, Cl. 536-17.00R.
Stein, Robert G., 4,318,920, Cl. 424-304.000.
Vcelka, John L., 4,318,812, Cl. 210-323.200.

Abiko, Ichimatsu: *See*—
Kotani, Shintaro; Abiko, Ichimatsu; Takano, Rikuo; Hoshino, Yasushi; Tokunaga, Yukio; and Tateishi, Kazuyoshi, 4,318,597, Cl. 354-5.000.

Abolins, Visvaldis, to General Electric Company. Titanium dioxide filled polyphenylene ether compositions. 4,318,836, Cl. 524-141.000.

ACF Industries, Incorporated: *See*—
Carlson, Edwin S., 4,318,531, Cl. 251-144.000.
Crawford, Edward N., 4,318,381, Cl. 123-440.000.

Acme Wire Products Corp.: *See*—
Walker, Ronnie H., 4,318,520, Cl. 248-97.000.

Acton, Alan: *See*—
Acton, Ernest D., 4,318,467, Cl. 198-703.000.

Acton, Ernest D., to Acton, Alan, a part interest. Conveyors. 4,318,467, Cl. 198-703.000.

Acurex Corporation: *See*—
Schreiber, Richard J.; Kesselring, John P.; and Kendall, Robert M., 4,318,392, Cl. 126-110.00R.

Adam, Adriana; and Gomes, Ana Beatriz M., to Forma S.A Moveis e Objetos de Arte. Structure for seating means. 4,318,570, Cl. 297-445.000.

Adams, Robert T.: *See*—
Pappas, Dennis G.; Baum, Matthew C.; Small, Samuel N.; Adams, Robert T.; and Freedman, Robert P., 4,319,220, Cl. 340-58.000.

Adamski, Henry S.; and Hartman, John F., to Eastman Kodak Company. Stapler. 4,318,555, Cl. 283-7.000.

Adler, Edward. Anode for production of electrodeposited foil. 4,318,794, Cl. 204-216.000.

AGA Aktiebolag: *See*—
Berndtsson, Christer, 4,318,399, Cl. 128-204.230.

Agrawal, Purushottam D.; and Mandell, John F., to Monsanto Company. Method for producing a collapse resistant polyester container for hot fill applications. 4,318,882, Cl. 264-521.000.

Akamatsu, Masahiko, to Mitsubishi Denki Kabushiki Kaisha. Synchronous machine drive apparatus. 4,319,176, Cl. 318-716.000.

Akasaki, Isamu: *See*—
Ohsima, Masaaki; and Akasaki, Isamu, 4,319,259, Cl. 357-17.000.

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Jacobsson, Kurt A. G.; and Johansson, Egon, 4,318,285, Cl. 66-132.00T.

Albers-Schonberg, George, to Merck & Co., Inc. Preparation of ammonium salt of hypocholesteremic fermentation product. 4,319,039, Cl. 560-256.000.

Albrecht, Johannes-Josef; Rammler, Roland; and Hirsch, Martin, to Metallgesellschaft Aktiengesellschaft. Process of cooling hot granular solids. 4,318,798, Cl. 208-11.00R.

Albright & Wilson Limited: *See*—
Harris, Glyn I.; and Coxon, Frederick, 4,318,821, Cl. 252-188.30R.

Alcan Research and Development Limited: *See*—
Jeffrey, Paul W.; and Blade, John C., 4,318,755, Cl. 148-11.50A.

Alcolac Inc.: *See*—
Sandri, Joseph M.; Calentine, John W.; Linder, Seymour M.; and Billoux, Yves J., 4,319,032, Cl. 548-320.000.

Alderman, Albert D., Jr.: *See*—
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Alexander, William C. Solar energy concentrator. 4,318,394, Cl. 126-438.000.

Alkio, Martti: *See*—
Aaltonen, Olli; and Alkio, Martti, 4,319,023, Cl. 536-57.000.

Allabashi, John C.: *See*—
Orlick, Charles A.; deButts, Edward H.; Allabashi, John C.; and Sweeney, Stanley E., 4,318,270, Cl. 60-219.000.

Allain, Jacques M.; Courtel, Daniel; Joubert, Jean L.; and Vidonne, Jean P., to Le Material Telephonique. Method and apparatus for converting virtual addresses to real addresses. 4,319,322, Cl. 364-200.000.

Allard, Louis R., to Beloit Corporation. Raker apparatus. 4,318,466, Cl. 198-511.000.

Allen-Bradley Company: *See*—
Grudowski, Raymond A.; and Engdahl, Jonathan R., 4,319,338, Cl. 364-900.000.

Alliance Manufacturing Company, Inc., The: *See*—
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Allied Chemical Corporation: *See*—
Cunningham, William J.; Smith, Addison M.; and Wiles, Robert A., 4,319,060, Cl. 570-177.000.

Allied Corporation: *See*—
Chou, Robert K., 4,318,715, Cl. 55-44.000.
Khattab, Ghazi M. A., 4,319,007, Cl. 525-431.000.

Allis-Chalmers Corporation: *See*—
Hess, Paul D., 4,318,692, Cl. 432-58.000.
Lee, George T.; Lees, John N., Jr.; and Pukita, Paul M., 4,318,713, Cl. 48-203.000.
Mayo, Howard A., Jr., 4,319,142, Cl. 290-52.000.

Alpha Nova Engineering Corp.: *See*—
Lee, Delbert, 4,318,654, Cl. 414-440.000.

Alps Electric Co., Ltd.: *See*—
Hara, Toshiwo, 4,319,209, Cl. 334-74.000.

Alternate Liquid Fuels Corp.: *See*—
Curtis, William S., 4,318,623, Cl. 366-144.000.

Altman, Gerald. Infrared radiation cooler for producing physiologic conditions such as a comfort or hypothermia. 4,318,722, Cl. 62-3.000.

Altmann, Conrad; and Feathers, Edgar M., to Eastman Kodak Company. Sorter mechanism. 4,318,542, Cl. 271-290.000.

Aluminum Company of America: *See*—
Brown, Melvin H.; and Tingle, William H., 4,318,275, Cl. 60-675.000.

Alvarez, Joseph A., III; Brennen, John F.; and Krug, Robert W., to International Business Machines Corporation. Priority threaded message burst mechanism for TDMA communication. 4,319,353, Cl. 370-104.000.

Alza Corporation: *See*—
Peery, John R.; Carpenter, Peter F.; and Griesinger, William K., 4,318,400, Cl. 128-214.00F.

Amano, Hisao: *See*—
Fukui, Hiroshi; and Amano, Hisao, 4,319,317, Cl. 363-124.000.

Ambros, Peter; and Gatzke, Erich, to Preh Elektrofeinmechanische Werke; and Jacob Preh Nachf. GmbH & Co. Printed circuit. 4,319,217, Cl. 338-308.000.

Amchem Products, Inc.: *See*—
Hall, Wilbur S., 4,318,944, Cl. 427-377.000.

American Can Company: *See*—
Church, John A., 4,318,748, Cl. 127-38.000.
Curley, Edward; and Muse, Herbert S., 4,318,263, Cl. 53-116.000.

American Cyanamid Company: *See*—
Conrow, Ransom B.; and Bernstein, Seymour, 4,318,864, Cl. 260-510.000.
Coscia, Anthony T.; Tarvin, Robert F.; and Bardoliwalla, Dinshaw F., 4,319,020, Cl. 528-405.000.
Pfeiffer, Ronald E.; and Peacher, Stanley E., 4,318,680, Cl. 425-382.200.
Shepherd, Robert G., 4,318,914, Cl. 424-267.000.

American Electronic Laboratories, Inc.: *See*—
Flam, Richard P., 4,319,248, Cl. 343-701.000.

American Home Products Corporation: *See*—
Dionne, Gervais; Asselin, Andre A.; and Humber, Leslie G., 4,319,029, Cl. 544-142.000.

American Standard Inc.: *See*—
Moore, Bernard C., 4,318,679, Cl. 425-348.00S.

AMF Incorporated: *See*—
Tallody, Alexander, 4,319,100, Cl. 200-16.00R.

AMP Inc.: *See*—
Willette, Albert D., 4,319,075, Cl. 174-117.0FF.

Ampex Corporation: *See*—
Ravizza, Raymond F., 4,319,289, Cl. 360-77.000.
Scott, Lawrence M.; Wolf, Irving; and Lee, Yu C., 4,318,734, Cl. 75-0.5BA.

Amundsen, Ralph D., to Webster Wood Preserving Company. Incisor roll. 4,318,433, Cl. 144-2.00J.

Anastas, Mark S.; and Vaughan, Russell F., to Boeing Company, The. Transition machine—a general purpose computer. 4,319,321, Cl. 364-200.000.

ANDCO Environmental Processes, Inc.: *See—*
Duffey, Joseph G., 4,318,788, Cl. 204-149.000.
Anderson, Leif G. E. Swaging machine for elongated bodies of metal, e.g. end pieces for wires in boat-rigs. 4,318,290, Cl. 72-205.000.
Anderson, Ralph E., Jr.; and Hughes, Scott E., to United Technologies Corporation. Thermal treatment and resultant microstructures for directional recrystallized superalloys. 4,318,753, Cl. 148-3.000.
Anderson, Robert W.; Gee, May L.; and McMullen, Alice K., to International Business Machines Corporation. Transaction execution system with improved key function versatility. 4,319,336, Cl. 364-900.000.
Anderson, Thomas P.; and Bramley, Richard G., to Microseal Corporation. Combined medical and/or informational identification credit card. 4,318,554, Cl. 283-7.000.
Ando, Kunio; Saito, Takemi; Toyama, Seiji; and Yamataka, Syuichi, to Fuji Photo Optical Co., Ltd. Image stabilized optical system. 4,318,584, Cl. 350-10.000.
Ando, Masato; Yamamoto, Kenji; and Taniguchi, Kazuhiro, to Electroplating Engineers of Japan, Limited. Automatic plating apparatus. 4,318,793, Cl. 204-198.000.
Anic S.p.A.: *See—*
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Anritsu Electric Company Limited: *See—*
Kuwahara, Kiyoshi, 4,319,080, Cl. 179-175.31R.
Antonucci, Louis T. Energy recovery device. 4,318,367, Cl. 122-20.00B.
Antos, George J., to UOP Inc. Nonacidic multimetallic catalytic composite. 4,318,827, Cl. 252-462.000.
Aoki, Shinobu: *See—*
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Aoyagi, Takaaki: *See—*
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Tompkins, Gene A., 4,318,366, Cl. 122-20.00B.
Arai, Masatoshi, to Shin-Etsu Chemical Co., Ltd. Novel organocyclotetrasiloxanes. 4,319,034, Cl. 556-425.000.
Arai, Takeo: *See—*
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Arietti, Giulio: *See—*
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Arlt, Dieter: *See—*
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Armah, Ben: *See—*
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Armitage, Ralph T. Push button switch. 4,319,106, Cl. 200-153.00J.
Armour, John S., to United Kingdom of Great Britain and Northern Ireland, The Minister of Transport in Her Britannic Majesty's Government of the. Friction controllers. 4,318,459, Cl. 188-181.00A.
Arnoldi, Douglas R.: *See—*
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Asahi Glass Company, Ltd.: *See—*
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Aston, William C.; and Walker, Derek, to IMI Yorkshire Imperial Plastics Limited. Manufacture of thermoplastics pipe. 4,318,681, Cl. 425-392.000.
Atari, Inc.: *See—*
Asher, James C., 4,319,099, Cl. 200-5.00A.
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Atkinson, David A., to Ball Corporation. Inspection device for containers. 4,318,808, Cl. 209-533.000.
Atlantic Research Corporation: *See—*
Stephens, William D.; and Ashmore, Charles I., 4,318,760, Cl. 149-19.200.
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Hsu, Chao-Yang; and Kesling, Haven S., Jr., 4,318,860, Cl. 260-405.500.
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Atmosphere Furnace Company: *See—*
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Atsumi, Toshio; Takebayashi, Yoshiaki; Fukui, Masaru; and Yamamoto, Hisao, to Sumitomo Chemical Co., Ltd.; and Kao Soap Co., Ltd. 4-Homoisotwistane derivatives. 4,318,925, Cl. 424-324.000.
Augeri, Joseph L., to Nestle Co., Inc., The. Label and labelled article. 4,318,235, Cl. 40-306.000.
Austin, Peter W.; and Fishwick, Brian R., to Imperial Chemical Industries Limited. Disperse monoazo dyes, their preparation and their application to synthetic textile materials. 4,318,851, Cl. 260-158.000.
Austin, Richard G.; Beach, David L.; and Pellegrini, John P., Jr., to Gulf Research & Development Company. Method for preparing synthetic hydrocarbon fluids. 4,319,065, Cl. 585-255.000.
Automotive Engine Associates: *See—*
Showalter, M. Robert; Kriesel, Kenneth W.; and Siewert, Charles L., 4,318,386, Cl. 123-590.000.
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Avco Investment Management Corporation: *See—*
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Ayer, Donald E.; and Schlagel, Carl A., to Upjohn Company, The. 9β,11β-Epoxy-5β-corticoids. 4,318,853, Cl. 260-239.55R.
Azuaje, Beltran V.: *See—*
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B. F. Goodrich Company, The: *See—*
Morningstar, Marion G., 4,319,012, Cl. 526-202.000.
Babiec, John S., Jr.; and Statton, Gary L., to Atlantic Richfield Company. Stabilized diphenylmethane diisocyanate-polymethylene polyphenyl isocyanate compositions. 4,318,861, Cl. 260-453.0SP.
Bacon, Leon C. Demountable dehydrator tray. 4,318,230, Cl. 34-238.000.
Badische Corporation: *See—*
Hurley, Rupert B., 4,319,045, Cl. 562-582.000.
Bagley, Julius B.: *See—*
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Bagrov, Georgy N.: *See—*
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Bahr, Jens: *See—*
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Baika, Toyokazu: *See—*
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Bailey, Ted E., Jr.: *See—*
Phillips, Jonathan W., Jr.; Bailey, Ted E., Jr.; and Bailey, C. L., Jr., 4,318,239, Cl. 42-89.000.
Bailie, Robert E., to Westinghouse Electric Corp. Multi-stage flash evaporator design. 4,318,780, Cl. 202-172.000.
Baitcher, Neal L., to Motorola, Inc. Loudspeaker having a unitary mechanical-acoustic diaphragm termination. 4,319,098, Cl. 179-180.000.
Bajka, Peter. Three port two-way diverter valve with integral drain on one output port. 4,318,424, Cl. 137-625.210.
Bakker, Cornelis: *See—*
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Ball Corporation: *See—*
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Balmer, Wilbur P.: *See—*
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Balzers Aktiengesellschaft: *See*—
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Ban, Keisuke; and Arai, Takeo, to Honda Giken Kogyo Kabushiki Kaisha. Method for casting a fiber-reinforced composite article. 4,318,438, Cl. 164-97.000.

Banasky, Howard V.: *See*—
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Bannister, Richard S., to Grass Valley Group, Inc., The. Chroma keying system. 4,319,266, Cl. 358-22.000.

Barber-Colman Company: *See*—
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Bardoliwalla, Dinshaw F.: *See*—
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Bareis, Alfred; Bergmann, Ewald; and Dommer, Hans-Martin, to L. Schuler Pressen GmbH. Press drive arrangement. 4,318,325, Cl. 83-530.000.

Barker, John C.; and McLaughlin, Ivan P., to J. J. Barker Company Limited. Three-dimensional decorative surface. 4,318,952, Cl. 428-172.000.

Barkhimer, Robert L.: *See*—
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Barnett, Allan E.: *See*—
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Barnett, Allen M.; Baron, Bill N.; Masi, James V.; and Russell, T. W. Fraser, to University of Delaware, The. Method for the continuous manufacture of thin film solar cells. 4,318,938, Cl. 427-75.000.

Barnett, Clifford R., to Bells & Mills Limited. Walls. 4,318,642, Cl. 405-284.000.

Baron, Bill N.: *See*—
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Barr, Harry S., to Pneumafil Corporation. Cotton gin filter. 4,318,721, Cl. 55-337.000.

Barry, Donald E.; and Lombardo, Igino, to Ortho Diagnostics, Inc. Method for measuring the velocity of a perturbed jetting fluid in an electrostatic particle sorting system. 4,318,482, Cl. 209-3.100.

Barry, Donald E.: *See*—
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Lombardo, Igino; and Barry, Donald E., 4,318,483, Cl. 209-3.100.

Bars, Gerard, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Transmission bridge for a subscriber set. 4,319,093, Cl. 179-23.000.

Bartelt, John L.: *See*—
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BASF Aktiengesellschaft: *See*—
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Merger, Franz; and Towae, Friedrich, 4,319,035, Cl. 560-25.000.
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BASF Wyandotte Corporation: *See*—
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Bateman, Charles D., to Sundstrand Corporation. Negative climb after take-off warning system with configuration warning means. 4,319,218, Cl. 340-27.0AT.

Bathellier, Andre; Germain, Michel; and Musikas, Claude, to Commissariat a l'Energie Atomique. Process for the separation of americium from curium contained in an aqueous nitric solution. 4,318,893, Cl. 423-10.000.

Batty, W. Lawson, Jr.: *See*—
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Bauer, Fritz, to Fritz Bauer & Sohne oHG. Axially adjustable pneumatic spring. 4,318,536, Cl. 267-64.120.

Bauer, Kurt; Dorr, Wilhelm; Kohler, Alfred; Krizek, Oldrich; and Prohaska, Hans, to ITT Industries Incorporated. Windshield wiper. 4,318,200, Cl. 15-250.320.

Bauer, Robert; and Rapkin, Myron C., to Miles Laboratories, Inc. Method and device for detecting glucose concentration. 4,318,985, Cl. 435-14.000.

Baum, Matthew C.: *See*—
Pappas, Dennis G.; Baum, Matthew C.; Small, Samuel N.; Adams, Robert T.; and Freedman, Robert P., 4,319,220, Cl. 340-58.000.

Baxter Travenol Laboratories, Inc.: *See*—
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Bayer Aktiengesellschaft: *See*—
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Fuchs, Rainer; Naumann, Klaus; Riebel, Hans-Jochem; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, 4,318,922, Cl. 424-304.000.
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Kohler, Klaus; Woditsch, Peter; Stutgens, Heribert; Bayer, Eckhard; Nollen, Klaus; and Sander, Hans, 4,318,843, Cl. 523-212.000.
Kohler, Klaus; Woditsch, Peter; Stutgens, Heribert; Bayer, Eckhard; Nollen, Klaus; and Sander, Hans, 4,318,844, Cl. 524-212.000.
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Lehmann, Wolfgang; Muller, Friedhelm; Cramn, Gunther; Hammerstrom, Knut; and Lobach, Wilfried, 4,319,019, Cl. 528-324.000.
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Bayer, Alfred M.; Faulkner, Norman K.; and Lasocki, Christine. Flexible deodorant ring holder. 4,318,193, Cl. 4-222.000.

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Kohler, Klaus; Woditsch, Peter; Stutgens, Heribert; Bayer, Eckhard; Nollen, Klaus; and Sander, Hans, 4,318,844, Cl. 524-212.000.

BBC Brown, Bovery & Company, Ltd.: *See*—
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Beach, David L.: *See*—
Austin, Richard G.; Beach, David L.; and Pellegrini, John P., Jr., 4,319,065, Cl. 585-255.000.

Beasom, James D., to Harris Corporation. Low thermal coefficient semiconductor device. 4,319,257, Cl. 357-13.000.

Beecham Group Limited: *See*—
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,318,856, Cl. 260-345.80R.

Behrenz, Wolfgang: *See*—
Fuchs, Rainer; Naumann, Klaus; Riebel, Hans-Jochem; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, 4,318,922, Cl. 424-304.000.

Beiersdorf Aktiengesellschaft: *See*—
Cohnen, Erich; Armah, Ben; and Hofferber, Eva, 4,318,915, Cl. 424-273.00R.

Beilke, Reuben M., to Dresser Industries, Inc. Process for manufacturing tongue and groove pliers. 4,318,292, Cl. 72-356.000.

Beisler, Alfons, to Beisler Gesellschaft mit beschrankter Haftung. Arrangement for sewing separate successive seams along different directions in a fabric material. 4,318,356, Cl. 112-121.140.

Beisler Gesellschaft mit beschrankter Haftung: *See*—
Beisler, Alfons, 4,318,356, Cl. 112-121.140.

Bell & Howell Company: *See*—
Orsinger, Winston A.; and Fallos, George, 4,318,265, Cl. 53-492.000.

Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., to Colt Industries Operating Corp. Current limit system for electrical discharge machining apparatus. 4,319,114, Cl. 219-69.00C.

Bell Telephone Laboratories, Incorporated: *See*—
Brown, Truman R., 4,319,190, Cl. 324-309.000.
King, William C.; Lynes, Dennis J.; Riehm, Charles E., Jr.; and Waaben, Sigurd G., 4,319,144, Cl. 307-236.000.
Remeika, Joseph P., 4,318,741, Cl. 75-175.00R.
Rhodes, Warren W.; and Yan, Man F., 4,318,995, Cl. 501-1.000.
Tien, Ping K., 4,318,752, Cl. 148-1.500.

Belleli Industrie Meccaniche S.p.A.: *See*—
Belleli, Riccardo, 4,318,441, Cl. 165-81.000.

Belleli, Riccardo, to Belleli Industrie Meccaniche S.p.A. Counterflow heat exchanger. 4,318,441, Cl. 165-81.000.

Bells & Mills Limited: *See*—
Barnett, Clifford R., 4,318,642, Cl. 405-284.000.

Beloit Corporation: *See*—
Allard, Louis R., 4,318,466, Cl. 198-511.000.

Bendix Corporation, The: *See*—
Caruso, Peter J., 4,319,223, Cl. 340-347.00P.
Kosinski, Alfred E., 4,318,460, Cl. 188-352.000.
Ritsema, Irving R., 4,318,458, Cl. 188-73.440.

Benedek, Vasile A.: *See*—
Wetrich, Peter D.; Marquart, Gordon L.; Huckler, Volker D.; and Benedek, Vasile A., 4,318,305, Cl. 74-339.000.

Benefield, William F.; and Larkin, Elmer D. Hay loader. 4,318,653, Cl. 414-24.500.

Benoit, Raymond A., to Wonder Corporation of America. Safety light. 4,319,309, Cl. 362-108.000.

Benthin, Frank: *See*—
Oetjen, Georg-Wilhelm; and Benthin, Frank, 4,318,398, Cl. 128-201.130.

Bergen, Franciscus H. M.; Collet, Marnix G.; and van de Polder, Leendert J., to U.S. Philips Corporation. Television imaging panel. 4,319,279, Cl. 358-213.000.

Berger, Michel; Lys, Jacques; and Demaire, Georges, to Societe e'Etudes et de Recherches en Sources d'Energie Nouvelles. Batteries, accumulators and electrochemical generators with non-metallic electrodes or electrodes in solution. 4,318,968, Cl. 429-105.000.

Berglund, Jan-Olof V., to Jan Berglund Produktions AB. Cellular plastic additive. 4,318,998, Cl. 521-54.000.

Bergmann, Ewald: *See*—
Bareis, Alfred; Bergmann, Ewald; and Dommer, Hans-Martin, 4,318,325, Cl. 83-530.000.

Bergsma, Wijtse; and Riemersma, Pieter, to U.S. Philips Corporation. Shaving apparatus. 4,318,223, Cl. 30-43.600.

Berlin, Claude M.; and Chantoin, Pierre M. Method of fuel can failure location in a nuclear reactor and especially a fast reactor. 4,318,775, Cl. 376-253.000.

Berndtsson, Christer, to AGA Aktiebolag. Respirator apparatus. 4,318,399, Cl. 128-204.230.

Bernstein, Seymour: *See*—
Conrow, Ransom B.; and Bernstein, Seymour, 4,318,864, Cl. 260-510.000.

Berry, Thomas: *See*—
Foster, Peter W.; Berry, Thomas; and Murenbeeld, Karel, 4,318,210, Cl. 28-246.000.

Bertotti, Franco; Prestileo, Vincenzo; and Foroni, Mario, to SGS-ATES Componenti Elettronici S.p.A. Integrated-circuit structure including lateral PNP transistor with polysilicon layer bridging gap in collector field relief electrode. 4,319,262, Cl. 357-35.000.

Bertz, Siegfried: *See*—
Proll, Norbert; Bertz, Siegfried; and Grabener, Karl-Heinz, 4,318,776, Cl. 376-254.000.

Bescherer, Robert E. Bird feeding device. 4,318,364, Cl. 119-51.00R.

Best Lock Corporation: *See*—
Best, Walter E.; and Foshee, William R., 4,318,558, Cl. 292-173.000.

Best, Robert M. Crypto microprocessor using block cipher. 4,319,079, Cl. 178-22.090.

Best, Walter E.; and Foshee, William R., to Best Lock Corporation. Latch bolt mechanism. 4,318,558, Cl. 292-173.000.

Bethel, Vernon V., to Emerson Electric Co. Bi-directional filter/drier having magnetically biased flapper valves. 4,318,809, Cl. 210-117.000.

Bethlehem Steel Corporation: *See*—
Gurtner, Mark A.; and Gorman, Charles D., 4,318,635, Cl. 405-126.000.

Betsudan, Shinichi: *See*—
Takano, Tadashi; Mizusawa, Motoo; Betsudan, Shinichi; and Sato, Shigeru, 4,319,250, Cl. 343-781.0CA.

Bhojwani, Arju H.: *See*—
Woebcke, Herman N.; Bhojwani, Arju H.; Gartside, Robert J.; and Johnson, Axel R., 4,318,800, Cl. 208-127.000.

Bianchi, Giuseppe; de Nora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, to Diamond Shamrock Technologies S.A. Valve metal electrode with valve metal oxide semi-conductor face and methods of carrying out electrolysis reactions. 4,318,795, Cl. 204-290.00F.

Bibring, Herve; Khan, Tasadduq; Rabinovitch, Maurice; Stohr, Jean-Francois; and Hauser, Jean-Michel, to Office National d'Etudes et de Recherches Aerospatiales O.N.E.R.A. Multi-phase metallic systems of the γ,γ′, NBC type with improved structural stability. 4,318,756, Cl. 148-32.500.

Bickel, Hans: *See*—
Woodward, Robert B.; and Bickel, Hans, 4,319,027, Cl. 544-016.000.

Bieler, Anne C.; and Howe, Milton A., Jr., to W. R. Grace & Co. Sealing cross-linked thermoplastic materials. 4,318,763, Cl. 156-198.000.

Bienenstein, Charles: *See*—
Shay, Harry; Sanders, Daniel; Turner, Nelson R.; and Bienenstein, Charles, 4,318,551, Cl. 280-788.000.

Bienvenue, Roland L.; and Walton, Herbert L., to GTE Products Corporation. Vehicle headlight having dual filament tungsten halogen lamp. 4,319,156, Cl. 313-113.000.

Bilenchi, Robert; and Trudeau, Edgar G., to Ford Motor Company. Seat back latch mechanism. 4,318,569, Cl. 297-379.000.

Billoux, Yves J.: *See*—
Sandri, Joseph M.; Calentine, John W.; Linder, Seymour M.; and Billoux, Yves J., 4,319,032, Cl. 548-320.000.

Binggeli, Bruno K.: *See*—
Kiess, Helmut G.; and Binggeli, Bruno K., 4,319,284, Cl. 358-294.000.

Biotest-Serum-Institut GmbH: *See*—
Stephan, Wolfgang, 4,318,902, Cl. 424-85.000.

Bird Machine Company, Inc.: *See*—
LeBlanc, Peter E., 4,318,805, Cl. 209-273.000.

Bisque, Ramon E.: *See*—
MacCarthy, Patrick, 4,318,243, Cl. 46-61.000.

Black, John W., to Pemco-Kalamazoo, Inc. Disk wheel with bearing housing injection molded therein. 4,318,204, Cl. 16-46.000.

Black, Robert E., Jr.: *See*—
Doukakis, Harry W.; and Black, Robert E., Jr., 4,318,271, Cl. 60-232.000.

Blackman, Maurice V.: *See*—
Jenner, Michael D.; and Blackman, Maurice V., 4,318,217, Cl. 29-572.000.

Blade, John C.: *See*—
Jeffrey, Paul W.; and Blade, John C., 4,318,755, Cl. 148-11.50A.

Blair, Winford, to Rohr Industries, Inc. Bi-metallic thermo-barrier material and method of welding. 4,318,965, Cl. 428-593.000.

Blasko, John E.; Boberski, William G.; and Seiner, Jerome A., to PPG Industries, Inc. Curable pigmented silicate compositions. 4,318,743, Cl. 106-84.000.

Blendax-Werke R. Schneider GmbH & Co.: *See*—
Hornig, Hans W., 4,318,878, Cl. 264-148.000.

Blevins, Theodore J., to General Electric Company. Washing machine hose guide. 4,318,519, Cl. 248-79.000.

Blodgett, Richard E.: *See*—
Furedi, Ervin J.; and Blodgett, Richard E., 4,318,314, Cl. 81-57.290.

Blount, George W., to New Century Products, Inc. Method of making resilient seats and cover lids therefor for water closets. 4,318,213, Cl. 29-434.000.

Boberski, William G.: *See*—
Blasko, John E.; Boberski, William G.; and Seiner, Jerome A., 4,318,743, Cl. 106-84.000.

Bobrinsky, Alexei A.: *See*—
Kulakov, Valery V.; Judin, Valentin P.; Pavlova, Antonina I.; Zlatkis, Anatoly M.; Bagrov, Georgy N.; Zverev, Ivan I.; Khazanov, Iosif I.; Suvorov, Alexei V.; Bobrinsky, Alexei A.; and Pasynkov, Vladimir A., 4,318,955, Cl. 428-235.000.

Bobrowski, Louis G., to Stanley Works, The. Wall storage system. 4,318,486, Cl. 211-87.000.

BOC Limited: *See*—
Farrer-Halls, James A., 4,318,274, Cl. 60-671.000.

Boccali, Filbert J.; Crompton, Eric J.; and Machan, Ivo, to Northern Telecom Limited. Testing of relays and similar devices. 4,319,193, Cl. 324-418.000.

Bock, Erich: *See*—
Rentzsch, Max; and Bock, Erich, 4,318,329, Cl. 89-1.816.

Bock, Rudolf. Hydraulic motor. 4,318,336, Cl. 91-474.000.

Boden, Richard M., to International Flavors & Fragrances Inc. Flavoring with branched chain olefinic alcohols. 4,318,934, Cl. 426-534.000.

Bodewes, Hermanus J. A.; and van den Goor, Jacobus M., to Lear Siegler, Inc. Conveyor device. 4,318,468, Cl. 198-718.000.

Boeing Aerospace Company: *See*—
Jensen, Warren M., 4,318,954, Cl. 428-209.000.

Boeing Company, The: *See*—
Anastas, Mark S.; and Vaughan, Russell F., 4,319,321, Cl. 364-200.000.
Porter, David R., 4,318,873, Cl. 264-1.500.
Rein-Weston, Karl J., 4,319,219, Cl. 340-27.0SS.
Rona, Thomas P., 4,318,328, Cl. 89-1.815.

Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., to Miles Laboratories, Inc. Heterogenous specific binding assay employing a cycling reactant as label. 4,318,980, Cl. 435-7.000.

Bok, Edward. Pen with an improved ink injection system. 4,318,626, Cl. 401-151.000.

Bokfors, Stefan J. A.: *See*—
Larsson, Bertil S. W.; Bokfors, Stefan J. A.; and Olsson, Karl G., 4,318,643, Cl. 406-14.000.

Bolick, Fred C., Jr.; Titus, Theodore, IV; and Bagley, Julius B., to Lanier Business Products, Inc. Dictation recording and transcribing method and apparatus including display for multiple recording media. 4,319,290, Cl. 360-92.000.

Bolin, Donald E., to Scott & Fetzer Company, The. Sequential timer with programmable dual frequency drive. 4,319,101, Cl. 200-38.00R.

Bollag, Werner; Ruegg, Rudolf; and Ryser, Gottlieb, to Hoffmann-La Roche Inc. Certain 6-(3′-methoxyphenyl) derivatives of 2,4-hexadienal. 4,319,048, Cl. 568-442.000.

Bom, Cornelis J. G.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,318,284, Cl. 64-28.00R.

Bonga, Benno I., to Ateliers des Charmilles. Electrode tool holder for EDM apparatus. 4,319,115, Cl. 219-69.00R.

Bonham, Robert D.; and Fantuzzo, Joseph, to Xerox Corporation. Magnet for a development system. 4,318,607, Cl. 355-3.0DD.

Boonman, Cornelis Johannes F. Anchor construction for prestressing members. 4,318,256, Cl. 52-223.00R.

Boozalis, Theodore S.; Ivy, John B.; and Willis, Gordon G., to Dow Chemical Company, The. Allyl chloride process. 4,319,062, Cl. 570-220.000.

Borca, Bruno, to PIRELLI/FURLANIS Applicasioni Idrauliche-agricole. Non-vibrating collapsible dam. 4,318,634, Cl. 405-115.000.

Borello, Gianpiero: *See*—
Occella, Sergio; Arietti, Giulio; and Borello, Gianpiero, 4,318,377, Cl. 123-279.000.

Borja, Jesus; Bakker, John A.; and French, Edward C., to Illinois Tool Works Inc. Fastening system. 4,318,208, Cl. 24-305.000.

Borrelli, Nicholas F.; and Young, Peter L., to Corning Glass Works. Photosensitive film and methods. 4,318,978, Cl. 430-346.000.

Bosch, Hendrik A.: *See*—
van der Scheer, Derk; and Bosch, Hendrik A., 4,319,210, Cl. 335-16.000.

Bossen, Douglas C., to International Business Machines Corp. Double error correction using single error correcting code. 4,319,357, Cl. 371-38.000.

Boswell, George A., Jr.: *See*—
Cherkofsky, Saul C.; and Boswell, George A., Jr., 4,318,917, Cl. 424-274.000.

Boucher, David G., to Lucas Industries Limited. Metallized molded reflector for a vehicle headlamp or fog lamp. 4,318,962, Cl. 428-458.000.

Boucher, Michel, to Cartier S.A. Method and installation for stripping a piece of soft cheese from a mold. 4,318,684, Cl. 425-437.000.

Boudreau, David L.: *See*—
Sander, Willy M.; Boudreau, David L.; and Hohl, G. Burnell, 4,319,337, Cl. 364-900.000.

Bourne, William R.; Harmon, Raymond E.; and Henrichs, Bernard W., to Hartwell Corporation. Latching mechanism. 4,318,557, Cl. 292-113.000.

Bowles, Howard R., to General Electric Company. Centered utensil sensor for induction surface units. 4,319,109, Cl. 219-10.49R.

Bozon, Alfred: *See*—
Hensel, Jorg; Koberstein, Edgar; Bozon, Alfred; and Volker, Martin H., 4,318,894, Cl. 423-212.000.

BP Chemicals Limited: *See*—
Cook, John; and Maitlis, Peter M., 4,319,043, Cl. 562-537.000.

Brace, Paul H.; and Balmer, Wilbur P., to Barber-Colman Company. Hall effect position detector. 4,319,236, Cl. 340-679.000.

Bracken, Joseph W., Jr.; and Rahbe, Edward E., to General Motors Corporation. Engine intake manifold. 4,318,372, Cl. 123-52.00M.

Bradshaw, John: *See*—
Clitherow, John W.; Bradshaw, John; Mackinnon, John W. M.; Price, Barry J.; Martin-Smith, Michael; and Judd, Duncan B., 4,318,913, Cl. 424-267.000.

Brady, Thomas J.: *See*—
Dow, John, Jr.; Oetting, William A.; Yessian, Richard J.; and Brady, Thomas J., 4,319,128, Cl. 235-61.0PD.

Bramley, Richard G.: *See*—
Anderson, Thomas P.; and Bramley, Richard G., 4,318,554, Cl. 283-7.000.

Brannan, Robert C.; Fogoros, Robert J.; Headrick, Michael R.; Krumins, Ainis; and Pryor, Robert F., to International Business Machines Corporation. Hot roll fuser temperature control. 4,318,612, Cl. 355-14.0FU.

Brauer, Hans-Martin, to Schwabische Huttenwerke Gesellschaft mit beschrankter Haftung. Railway car wheel. 4,318,564, Cl. 295-11.000.

Braun, Albert; Portz, Willi; and Strauss, Georg, to Hoechst Aktiengesellschaft. Production of agent for desulfurizing crude iron and steel melts. 4,318,822, Cl. 252-189.000.

Bremer, Robert C., Jr., to Wallace Murray Corporation. Deformed locking clamp. 4,318,309, Cl. 74-574.000.

Brennen, John F.: *See*—
Alvarez, Joseph A., III; Brennen, John F.; and Krug, Robert W., 4,319,353, Cl. 370-104.000.

Brent, Allan L. Motor control method and system. 4,319,170, Cl. 318-376.000.

Brewer, Arthur D.: *See*—
Tsai, Allan K. S.; Lennox, Duncan D.; and Brewer, Arthur D., 4,319,033, Cl. 549-15.000.

Bricker, James C.: *See*—
Wichmann, Frederick R.; and Bricker, James C., 4,318,337, Cl. 98-115.0VM.

Bright, Charles A., Jr.: *See*—
Moss, David E.; Stone, Karl E.; Bright, Charles A., Jr.; and Rusch, Randy A., 4,318,936, Cl. 427-38.000.

Brine, William H., Jr., to W. H. Brine Company. Game ball. 4,318,544, Cl. 273-65.0EG.

Brink, Andries: *See*—
Jager, Berend; Brink, Andries; and Kleynjan, Cornelis, 4,318,797, Cl. 208-8.0LE.

British Petroleum Company Limited, The: *See*—
Gane, Brian R.; and Stewart, David G., 4,319,056, Cl. 568-902.000.

Brizgys, Bernardas: *See*—
Gallagher, James A.; and Brizgys, Bernardas, 4,318,838, Cl. 524-444.000.

Brodrene Gram A/S: *See*—
Gram, Hans, 4,318,279, Cl. 62-470.000.

Brorein, William J., to GK Technologies, Incorporated. Safety grounding for metal clad cables. 4,318,461, Cl. 191-12.20R.

Brosch, Karl: *See*—
Egbers, Gerhard; Artzt, Peter; Brosch, Karl; and Rottmayr, Hans, 4,318,269, Cl. 57-18.000.

Brosio, Alberto; and Seano, Vittorio, to CSELT Centro Studi e Laboratori Telecomunicazioni S.p.A. Performance-stabilization system for an electrical component emitting pulsed energy. 4,319,203, Cl. 372-30.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Watanabe, Yasuhiko, 4,318,646, Cl. 408-6.000.

Broussaud, Daniel, to Societe Anonyme dite: Compagnie Generale d'Electricite. Method of manufacturing a dense silicon carbide ceramic. 4,318,876, Cl. 264-65.000.

Brown, George A.; Relyea, Lloyd A.; Scharfe, Merlin E.; and Pinsler, Heinz W., to Xerox Corporation. Overcoated inorganic layered photoresponsive device and process of use. 4,318,973, Cl. 430-31.000.

Brown, Melvin H.; and Tingle, William H., to Aluminum Company of America. Atmospheric thermal energy conversion system. 4,318,275, Cl. 60-675.000.

Brown, Russell W.: *See*—
Stowell, Roger H.; Hirtle, Michael O.; Brown, Russell W.; and Moore, Arthur D., 4,318,245, Cl. 46-232.000.

Brown, Truman R., to Bell Telephone Laboratories, Incorporated. Nuclear magnetic resonance imaging in space and frequency coordinates. 4,319,190, Cl. 324-309.000.

Brown, William C.; and Purtell, Frederick H., to Singer Company, The. Segmented curved screen construction for preserving a predefined curvature. 4,318,589, Cl. 350-125.000.

Bruckner Apparatebau GmbH: *See*—
Schuierer, Manfred, 4,318,209, Cl. 26-74.000.

Brunke, Ernst J.: *See*—
Klein, Erich; and Brunke, Ernst J., 4,318,831, Cl. 252-522.00R.

Brunswick Corporation: *See*—
Fitzner, Arthur O., 4,318,387, Cl. 123-602.000.
Wenstadt, Thomas D.; and Chmielewski, Cary J., 4,318,699, Cl. 440-1.000.

Budd Company, The: *See*—
Skypala, Louis M., 4,318,350, Cl. 105-397.000.
Weinhaus, Harold R., 4,318,462, Cl. 191-30.000.

Budrow, Russell B.: *See*—
Yaste, Ruth E.; and Budrow, Russell B., 4,319,074, Cl. 174-116.000.

Buhler, Arthur; and Schutz, Hans U., to Ciba-Geigy Corporation. Novel metallized dyes, their manufacture and use. 4,318,849, Cl. 260-148.000.

Buhmann, Hans-Rolf; Arlt, Dieter; and Jautelat, Manfred, to Bayer Aktiengesellschaft. Process for the preparation of optionally substituted benzaldehyde dialkyl acetals. 4,318,783, Cl. 204-59.00R.

Buholtz, William F.; and Geis, Timothy R., to Burroughs Corporation. Magnetic toner imaging-multiplexing apparatus. 4,318,606, Cl. 355-3.0DD.

Builders Concrete, Inc.: *See*—
Sluys, Wesley W., 4,318,361, Cl. 114-263.000.

Bunker Ramo Corporation: *See*—
Coyne, Lawrence J., 4,318,586, Cl. 350-96.160.
Holt, Harley R., 4,318,215, Cl. 29-566.300.

Bunsmaster Bakeries of America, Inc.: *See*—
Vona, Romanino, 4,318,577, Cl. 312-284.000.

Burch, Robert A.: *See*—
Shenoha, James L.; and Burch, Robert A., 4,318,340, Cl. 101-27.000.

Burd, John F.; and Li, Thomas M., to Miles Laboratories, Inc. Homogeneous specific binding assay employing an intramolecularly modulated photogenic enzyme substrate label. 4,318,981, Cl. 435-7.000.

Burroughs Corporation: *See*—
Buholtz, William F.; and Geis, Timothy R., 4,318,606, Cl. 355-3.0DD.
Hurkmans, Antoon M.; Arnoldi, Douglas R.; and Sloan, Richard A., Jr., 4,319,254, Cl. 346-140.00R.
Meldrum, James S., 4,319,305, Cl. 361-415.000.
Paananen, Eugene E.; Casper, Mark S.; and Peng, Chung H., 4,318,540, Cl. 271-4.000.
Rubinfield, Louis P., 4,319,335, Cl. 364-787.000.

Burroughs Wellcome Co.: *See*—
Cardinal, David C.; and Flower, Roderick J., 4,319,194, Cl. 324-449.000.

Burton, Carl, to Johnston & Margolis, P.C. Lock for sliding members. 4,318,559, Cl. 292-263.000.

Buschulte, Winfried; and Dageforde, Friedhelm, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Oil burner. 4,318,688, Cl. 431-114.000.

Bush, John E.; Fenneman, David B.; and Smith, Ronald E., to United States of America, Navy. Self compressing supersonic flow device. 4,319,201, Cl. 372-58.000.

Butler, William R.: *See*—
Roddy, Joseph T.; and Butler, William R., 4,319,150, Cl. 310-89.000.

C. van der Lely N.V.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,318,284, Cl. 64-28.00R.

Cabane, Bruno; and Vergnault, Joel, to PCUK Produits Chimiques Ugine Kuhlmann. Process for biological denitrification of effluents. 4,318,988, Cl. 435-176.000.

Cabestany, Jean; Trouve, Claude; and Depernet, Dominique, to Societe Francaise Hoechst. Powdered cationic polyelectrolytes, based on acrylamide and quaternized or salified dimethyl-aminoethyl acrylate, process for producing them. 4,319,013, Cl. 526-287.000.

Calentine, John W.: *See*—
Sandri, Joseph M.; Calentine, John W.; Linder, Seymour M.; and Billoux, Yves J., 4,319,032, Cl. 548-320.000.

California Institute of Technology: *See*—
Rippel, Wally E.; and Edwards, Dean B., 4,319,318, Cl. 363-138.000.

Callanan, Robert F.; and Soutsos, Michael D. Pipe thread protector. 4,318,426, Cl. 138-96.00T.

Calundann, Gordon W.: *See*—
East, Anthony J.; and Calundann, Gordon W., 4,318,841, Cl. 524-605.000.
East, Anthony J.; and Calundann, Gordon W., 4,318,842, Cl. 524-605.000.

Calvert, James W.; and Shinkle, Charles P., to Cincinnati Milacron Inc. Indexing drive control. 4,318,465, Cl. 198-341.000.

Calvert, Michael A., to T. K. Valve Limited. Ball valves. 4,318,420, Cl. 137-74.000.

Canadian General Electric Company Limited: *See*—
Szymanis, Edward, 4,318,268, Cl. 56-255.000.

Canevari, Gerard P., to Exxon Research & Engineering Co. Efficiency ship propeller. 4,318,671, Cl. 416-90.00A.

Cann, Peter L.; Duell, Richard J.; and Casler, Donald J., to Carrier Corporation. Non-reverse hot gas defrost system. 4,318,277, Cl. 62-278.000.

Canning, Everett J., Jr., to Western Electric Co. Incorporated. Copper refining and novel flux therefor. 4,318,737, Cl. 75-76.000.

Canon Kabushiki Kaisha: *See*—
Goshima, Takeshi; and Minoura, Kazuo, 4,318,583, Cl. 350-6.600.

Hanada, Hiroshi, 4,318,594, Cl. 350-433.000.
Knechtel, Wilhelm; and Stillger, Friedel, 4,318,609, Cl. 355-11.000.
Matsumura, Isao, 4,318,585, Cl. 350-46.000.
Minoura, Kazuo; Kiyohara, Takehiko; and Uchiyama, Haruo, 4,318,582, Cl. 350-6.600.
Takimoto, Hiroyuki, 4,318,596, Cl. 352-14.000.
Tanaka, Kazuo, 4,318,592, Cl. 350-427.000.
Tsuji, Sadahiko; Hirata, Noritsugu; and Tanaka, Kazuo, 4,318,593, Cl. 350-430.000.

Capano, James J., to Manno Uniform and Security Equipment Corp. Pistol holster with lock-in means. 4,318,503, Cl. 224-244.000.

Cardinal, David C.; and Flower, Roderick J., to Burroughs Wellcome Co.; and Wellcome Foundation Ltd. Method of and apparatus for monitoring platelet aggregation and test cell for use in such method and apparatus. 4,319,194, Cl. 324-449.000.

Carl Zeiss-Stiftung: *See*—
Elger, Adolf, 4,318,599, Cl. 354-51.000.

Carlson, Edwin S., to ACF Industries, Incorporated. Low profile cone valve assembly. 4,318,531, Cl. 251-144.000.

Carpenter, James E.; and Goody, Brian A., to Fisher Controls International, Inc. Monitoring apparatus. 4,319,147, Cl. 307-442.000.

Carpenter, Peter F.: *See*—
Peery, John R.; Carpenter, Peter F.; and Griesinger, William K., 4,318,400, Cl. 128-214.00F.

Carrico, Robert J.: *See*—
Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,318,980, Cl. 435-7.000.

Carrier Corporation: *See*—
Cann, Peter L.; Duell, Richard J.; and Casler, Donald J., 4,318,277, Cl. 62-278.000.
Nelson, Dana W.; and Kouse, Charles H., 4,318,334, Cl. 91-59.000.

Carroll, Richard R.; and Papp, Alan M., to Litton Industrial Products, Inc. Machining center with tool shuttle. 4,318,665, Cl. 414-728.000.

Carson, William R.; and Singh, Braj K., to Combustion Engineering, Inc. Orificing of steam separators for uniform flow distribution in riser area of steam generators. 4,318,368, Cl. 122-34.000.

Cartier S.A.: *See*—
Boucher, Michel, 4,318,684, Cl. 425-437.000.

Caruso, Peter J., to Bendix Corporation, The. Full code means for electromechanical decoder. 4,319,223, Cl. 340-347.00P.

Casler, Donald J.: *See*—
Cann, Peter L.; Duell, Richard J.; and Casler, Donald J., 4,318,277, Cl. 62-278.000.

Casper, Mark S.: *See*—
Paananen, Eugene E.; Casper, Mark S.; and Peng, Chung H., 4,318,540, Cl. 271-4.000.

Caterpillar Tractor Co.: *See*—
Cemenska, Richard A., 4,318,333, Cl. 91-31.000.
Clarke, John M.; and Wells, Alan W., 4,318,675, Cl. 418-53.000.
Livesay, Richard E., 4,318,446, Cl. 173-13.000.
Vize, Robert M., 4,318,571, Cl. 303-71.000.
Windish, Willis E., 4,318,283, Cl. 64-27.00C.

Caygill, John C.: *See*—
Thomson, Alan R.; Miles, Brynley J.; Caygill, John C.; and Moore, David J., 4,318,990, Cl. 435-219.000.

Ceintrey, Claude, to Rhone-Poulenc Systemes. Heat and solvent sensitive recording material and process to use it. 4,318,937, Cl. 427-56.100.

Celanese Corporation: *See*—
East, Anthony J.; and Calundann, Gordon W., 4,318,841, Cl. 524-605.000.
East, Anthony J.; and Calundann, Gordon W., 4,318,842, Cl. 524-605.000.

Cemenska, Richard A., to Caterpillar Tractor Co. Bidirectional, multiple speed hydraulic actuator. 4,318,333, Cl. 91-31.000.

Cense, Adriaan; Gander, Maurice C.; and Thompson, Donald G., to U.S. Philips Corporation. Television receiver synchronizing arrangement. 4,319,276, Cl. 358-158.000.

Central Hydraulics Co.: *See*—
Jacobsen, LeRoy V., 4,318,550, Cl. 280-766.000.

Centro Ricerche Fiat S.p.A.: *See*—
Occella, Sergio; Arietti, Giulio; and Borello, Gianpiero, 4,318,377, Cl. 123-279.000.

Cerda Olmedo, Enrique: *See*—
Murillo Araujo, Francisco J.; Lopez Calderon, Isabel; Lopez Diaz, Isabel; and Cerda Olmedo, Enrique, 4,318,987, Cl. 435-172.000.

Chabala, Leonard V., to S&C Electric Company. Force-limiting coupling apparatus. 4,319,108, Cl. 200-308.000.

Chakupurakal, Thomas, to General Motors Corporation. Surface etching before electroding zirconia exhaust gas oxygen sensors. 4,318,770, Cl. 156-637.000.

Chamorro, Sigfrido K.: *See*—
Konther, Siegfried; Chamorro, Sigfrido K.; and Chamorro, Udi K., 4,318,370, Cl. 123-44.00C.

Chamorro, Udi K.: *See*—
Konther, Siegfried; Chamorro, Sigfrido K.; and Chamorro, Udi K., 4,318,370, Cl. 123-44.00C.

Champion International Corporation: *See*—
Montealegre, James, 4,318,470, Cl. 206-180.000.

Chamran, Morteza M.; Scott, Larkin B.; and Williams, Paul B., to Perkin-Elmer Corporation, The. Manual wavelength adjustment for a microprocessor based spectrophotometer. 4,318,616, Cl. 356-332.000.

Chance, Davey J.: *See*—
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,319,114, Cl. 219-69.00C.

Chandler, Charles E., to AAI Corporation. Ammunition with surface-mounted light-settable pickup arrangement for digital memory storage. 4,318,342, Cl. 102-207.000.

Chantoin, Pierre M.: *See*—
Berlin, Claude M.; and Chantoin, Pierre M., 4,318,775, Cl. 376-253.000.

Chaplin, Gary F.; Schwarz, Frederick M.; and Griffin, James G., to United Technologies Corporation. Seal means for a gas turbine engine. 4,318,668, Cl. 415-135.000.

Chapman, Lloyd R., to General Motors Corporation. Enhanced oxide whisker growth on cold-rolled aluminum-containing stainless steel foil. 4,318,828, Cl. 252-465.000.

Chapman, Lloyd R.; Vigor, Charles W.; and Watton, John F., to General Motors Corporation. Wound foil structure comprising distinct catalysts. 4,318,888, Cl. 422-180.000.

Charles, Stanley E.; Long, Donald A.; Katsenis, Peter G.; and Mosher, Walter W., Jr., to Precision Dynamics Corporation. Identification device with versatile imprinting means. 4,318,234, Cl. 40-21.00C.

Chason, Kenneth R., to GTI Corporation. Method of welding tantalum lead wires to tantalum capacitor anodes. 4,319,118, Cl. 219-118.000.

Checkley, David L.; and Renton, Larry W., to Atmosphere Furnace Company. Work transfer assembly. 4,318,660, Cl. 414-518.000.

Chem-Lawn Corporation: *See*—
Coury, Robert M., 4,318,729, Cl. 71-29.000.

Chemali, Roland; and Tabanou, Jacques, to Schlumberger Technology Corporation. Deep and/or shallow electrical resistivity investigation suitable for dual resistivity-induction logging. 4,319,192, Cl. 324-375.000.

Chemische Fabrik: *See*—
Nowak, Rudolf; Dahmen, Kurt; and Stockhausen, Dolf, 4,318,705, Cl. 8-436.000.

Chen, Chien Chung: *See*—
Chen, Chin S., 4,318,546, Cl. 273-188.00R.

Chen, Chin S., to Chen, Chien Chung. Golf club swing training device. 4,318,546, Cl. 273-188.00R.

Chen, Hsing-Yao, to RCA Corporation. Electron gun with deflection-synchronized astigmatic screen grid means. 4,319,163, Cl. 315-14.000.

Cherkofsky, Saul C.; and Boswell, George A., Jr., to Du Pont de Nemours, E. I., and Company. Antiinflammatory 2,3-diaryl-5-[2,2,2-trifluoro-1-(trifluoromethyl]ethyl-1H-pyrroles. 4,318,917, Cl. 424-274.000.

Chicago Bridge & Iron Company: *See*—
DeGraaf, Douglas W., 4,318,423, Cl. 137-615.000.

Chin, Albert K., to Fogarty, Thomas J. Double lumen dilatation catheter. 4,318,410, Cl. 128-325.000.

Ching, Yook J. Heel structure for shoes. 4,318,232, Cl. 36-73.000.

Chmielewski, Cary J.: *See*—
Wenstadt, Thomas D.; and Chmielewski, Cary J., 4,318,699, Cl. 440-1.000.

Choi, Dai-Shik, to Conoco Inc. Method of determining mine roof stability. 4,318,302, Cl. 73-761.000.

Chou, Robert K., to Allied Corporation. Process for sweeping methane from a physical solvent. 4,318,715, Cl. 55-44.000.

Christensen, Burton G.; and Ratcliffe, Ronald W., to Merck & Co., Inc. 6-(1-Hydroxyethyl)-3-substituted-1-azabicyclo(3.2.0)-hept-2-en-7-one-2-carboxylic acid. 4,318,912, Cl. 424-263.000.

Christner, James E.: *See*—
Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,318,980, Cl. 435-7.000.

Chung, Wang C.: *See*—
Magid, Sidney H.; and Chung, Wang C., 4,318,244, Cl. 46-74.00D.

Church, John A., to American Can Company. Continuous process for saccharification of whole starchy materials. 4,318,748, Cl. 127-38.000.

Ciba-Geigy Corporation: *See*—
Buhler, Arthur; and Schutz, Hans U., 4,318,849, Cl. 260-148.000.
Felder, Louis; Kirchmayr, Rudolf; and Husler, 4,318,791, Cl. 204-159.230.
Polony, Rudolf; Reinert, Gerhard; Holzle, Gerd; Pugin, Andre; and Vonderwahl, Rodolphe, 4,318,883, Cl. 422-22.000.
Schmidt-Ruppin, Karl H.; Lukas, Bohumir; and Wiesendanger, Walter, 4,318,926, Cl. 424-330.000.
Spivack, John D.; Dexter, Martin; and Pastor, Stephen D., 4,318,845, Cl. 524-91.000.
Woodward, Robert B.; and Bickel, Hans, 4,319,027, Cl. 544-016.000.

Ciesla, Peter F.: *See*—
Kligman, Albert M.; McKenzie, Walter L.; and Ciesla, Peter F., 4,318,907, Cl. 424-230.000.

Cincinnati Milacron Inc.: *See*—
Calvert, James W.; and Shinkle, Charles P., 4,318,465, Cl. 198-341.000.

Claassen, George R., to PPG Industries, Inc. Double link arrangement for press bending molds and method of press shaping glass sheets. 4,318,728, Cl. 65-106.000.

Claffey, Kevin; and Osipow, Lloyd, to IPCO Corporation. Highly stable gel, its use and manufacture. 4,318,746, Cl. 106-194.000.

Clark, Donald Y. Material spreader device. 4,318,511, Cl. 239-684.000.

Clark, John M., Jr.: *See*—
Showalter, M. Robert; Clark, John M., Jr.; and Fogwell, J. Wray, 4,318,868, Cl. 261-41.00D.

Clarke, John M.; and Wells, Alan W., to Caterpillar Tractor Co. Rotary expansible chamber apparatus with stress relief. 4,318,675, Cl. 418-53.000.

Clarke, William J., to Hayward Baker Company. Magnesium diacrylate, polyol monoacrylate grouting composition and method for

grouting joints and/or cracks in sewer conduits therewith. 4,318,835, Cl. 264-36.000.
Clay, Wallace C.: *See*—
Heyer, Arthur J.; Springer, Edward M.; and Clay, Wallace C., 4,319,253, Cl. 346-139.00C.
Clayton, John P.: *See*—
Luk, Kong; Clayton, John P.; and Rogers, Norman H., 4,318,856, Cl. 260-345.80R.
Clement, Joseph, to Mead Corporation, The. Gravity feed merchandise dispensing device. 4,318,485, Cl. 211-49.00D.
Clement, Philippe; and Loiez nee Hennette, Annie, to Lesaffre et Cie. Process for obtaining new strains of yeast for bread-making and novel strains of yeast thus prepared. 4,318,929, Cl. 426-62.000.
Clement, Philippe; and Loiez nee Hennette, Annie, to Lesaffre et Cie. Strains of yeast for bread-making and novel strains of yeast thus prepared. 4,318,930, Cl. 426-62.000.
Cline, Jack M. Land towing vehicle for small aircraft. 4,318,448, Cl. 180-14.00C.
Clitherow, John W.; Bradshaw, John; Mackinnon, John W. M.; Price, Barry J.; Martin-Smith, Michael; and Judd, Duncan B., to Glaxo Group Limited. 1,2,4-Triazole-3,5-diamine derivatives. 4,318,913, Cl. 424-267.000.
Coal Industry (Patents) Limited: *See*—
Harrington, Pete F., 4,318,303, Cl. 73-861.230.
Parker, David S.; Shaw, Stephen R.; and Hudson, Robert, 4,318,296, Cl. 73-61.400.
Codat Management Limited: *See*—
De Mattos, David N., 4,318,321, Cl. 83-71.000.
Cogan, Fredrick T., to Northern Telecom Limited. Telephone handset transducer mounting. 4,319,095, Cl. 179-103.000.
Cohnen, Erich; Armah, Ben; and Hofferber, Eva, to Beiersdorf Aktiengesellschaft. Substituted guandines and methods of preparation thereof. 4,318,915, Cl. 424-273.00R.
Cointot, Denis F., to Societe Anonyme de Telecommunications. Predictor stage for a digit rate reduction system. 4,319,360, Cl. 375-27.000.
Cole, Ronald A., to Greenmeadow Engineers Limited. Attachment of masses to aircraft and spacecraft. 4,318,516, Cl. 244-54.000.
Coleman, William E., Jr.: *See*—
Glasgow, Norman B.; and Coleman, William E., Jr., 4,318,508, Cl. 236-47.000.
Collet, Marnix G.: *See*—
Bergen, Franciscus H. M.; Collet, Marnix G.; and van de Polder, Leendert J., 4,319,279, Cl. 358-213.000.
Collum, Paulette: *See*—
Martin, Jerry R.; Tadanier, John S.; and Collum, Paulette, 4,319,022, Cl. 536-17.00R.
Colt Industries Operating Corp: *See*—
Bell, Oliver A., Jr.; Gilleland, Randall C.; and Chance, Davey J., 4,319,114, Cl. 219-69.00C.
Dodson, Robert W., 4,318,214, Cl. 29-527.600.
Combustion Engineering, Inc.: *See*—
Carson, William R.; and Singh, Braj K., 4,318,368, Cl. 122-34.000.
Musick, Charles R., 4,318,778, Cl. 376-216.000.
Commercial Interiors, Inc.: *See*—
Orfield, Steven J., 4,319,088, Cl. 179-1.50M.
Commissariat a l'Energie Atomique: *See*—
Bathellier, Andre; Germain, Michel; and Musikas, Claude, 4,318,893, Cl. 423-10.000.
Gignoux, Michel, 4,319,207, Cl. 333-173.000.
Communications Satellite Corporation: *See*—
Gupta, Shanti S.; Warner, Brady; and Deal, Joseph H., Jr., 4,319,352, Cl. 370-104.000.
Compaan, Klaas: *See*—
Roos, Jan; Compaan, Klaas; and van Kasteren, Adrianus C., 4,319,280, Cl. 358-214.000.
Compagnia Internationale pour l'Informatique: *See*—
Mollier, Jean H., 4,319,355, Cl. 371-21.000.
Compagnie Generale des Etablissements Michelin: *See*—
Gouttebessis, Jacques; and Martel, Michel, 4,318,429, Cl. 141-1.000.
Reiniche, Andre, 4,318,440, Cl. 164-462.000.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
Bars, Gerard, 4,319,093, Cl. 179-23.000.
Connolly, James D. Screen welding machine. 4,319,112, Cl. 219-56.000.
Connor, Joseph E.: *See*—
Jacobsen, Robert; and Connor, Joseph E., 4,318,493, Cl. 220-270.000.
Conoco Inc.: *See*—
Choi, Dai-Shik, 4,318,302, Cl. 73-761.000.
Peterson, Marvin L.; Putnik, Charles F.; and Maxson, Orwin G., 4,318,787, Cl. 204-147.000.
Conrow, Ransom B.; and Bernstein, Seymour, to American Cyanamid Company. Process for making s-phenenyltris(sulfonylimino)tri-benzene mono- and di-sulfonic acids and salts. 4,318,864, Cl. 260-510.000.
Consan Pacific Incorporated: *See*—
Moulden, R. Edward, 4,319,302, Cl. 361-213.000.
Container Corporation of America: *See*—
Nauheimer, James F.; and Julich, Gregory G., 4,318,472, Cl. 206-284.000.
Continental Electronics Mfg. Co.: *See*—
Weldon, James O.; and Sainton, Joseph B., 4,319,204, Cl. 332-9.00R.
Continental Group, Inc., The: *See*—
Hasegawa, Gary K., 4,318,474, Cl. 206-428.000.
Heyn, William M., 4,318,494, Cl. 220-271.000.
Jacobsen, Robert; and Connor, Joseph E., 4,318,493, Cl. 220-270.000.
Continental Pharma: *See*—
Roncucci, Romeo; and Lansen, Jacqueline, 4,318,706, Cl. 23-230.00B.
Cook, John; and Maitlis, Peter M., to University of Sheffield; and BP Chemicals Limited. Process for the production of oxygenated organic compounds. 4,319,043, Cl. 562-537.000.
Cook, Paul A.; Mayo, Randall D.; and Raider, Jerry W., to International Business Machines Corporation. Stepper motor drive system. 4,319,174, Cl. 318-696.000.
Cooney, Peter L.: *See*—
Shrimpton, Ronald H.; and Cooney, Peter L., 4,318,875, Cl. 264-54.000.
Cooper, Leon N.: *See*—
Elbaum, Charles; and Cooper, Leon N., 4,319,331, Cl. 364-515.000.
COPCO, Inc.: *See*—
De Winter, Koen, 4,318,478, Cl. 206-553.000.
Cordell, Charles E., Jr. Disposable suitcase. 4,318,505, Cl. 229-52.00B.
Corey, Dennis J.: *See*—
Cutler, Donald B.; and Corey, Dennis J., 4,318,281, Cl. 64-1.00V.
Corning Glass Works: *See*—
Borrelli, Nicholas F.; and Young, Peter L., 4,318,978, Cl. 430-346.000.
Dorman, William H.; and Smith, Jerome J., 4,318,537, Cl. 269-302.100.
Cortesi, Sergio S. Metal-infibulum ceramic-head endoprosthesis. 4,318,190, Cl. 3-1.913.
Coscia, Anthony T.; Tarvin, Robert F.; and Bardoliwalla, Dinshaw F., to American Cyanamid Company. Polyquaternary flocculants. 4,319,020, Cl. 528-405.000.
Cosentino, Angelo J.: *See*—
Newbould, John; Cosentino, Angelo J.; and Wright, Paul E., 4,318,839, Cl. 524-538.000.
Courtel, Daniel: *See*—
Allain, Jacques M.; Courtel, Daniel; Joubert, Jean L.; and Vidonne, Jean P., 4,319,322, Cl. 364-200.000.
Coury, Robert M., to Chem-Lawn Corporation. Stable liquid N-P-K fertilizer composition and method of use. 4,318,729, Cl. 71-29.000.
Coutin, Pierre F.: *See*—
Hasquenoph, Jean H.; and Coutin, Pierre F., 4,318,561, Cl. 294-83.00R.
Coxon, Frederick: *See*—
Harris, Glyn I.; and Coxon, Frederick, 4,318,821, Cl. 252-188.30R.
Coyne, Lawrence J., to Bunker Ramo Corporation. Distributive couplers for fiber optics. 4,318,586, Cl. 350-96.160.
Cozewith, Charles: *See*—
Irani, Cyrus A.; Cozewith, Charles; and Kasegrande, Stephen S., 4,319,021, Cl. 528-498.000.
Crafco, Inc.: *See*—
Robinson, J. Ronald, 4,318,475, Cl. 206-447.000.
Cramn, Gunther: *See*—
Lehmann, Wolfgang; Muller, Friedhelm; Cramn, Gunther; Hammerstrom, Knut; and Lobach, Wilfried, 4,319,019, Cl. 528-324.000.
Crandall, Richard S., to RCA Corporation. Method for measuring the drift mobility in doped semiconductors. 4,319,187, Cl. 324-158.00D.
Crawford, Edward N., to ACF Industries, Inc. Air bleed control system improvment. 4,318,381, Cl. 123-440.000.
Creusot-Loire: *See*—
Malipier, Louis; and Marconnet, Guy, 4,318,620, Cl. 366-25.000.
Critikon, Inc: *See*—
Vaillancourt, Vincent L., 4,318,402, Cl. 128-214.400.
Cromemco Inc.: *See*—
Terwilliger, Curtis G., 4,319,200, Cl. 331-8.000.
Crompton, Eric J.: *See*—
Boccali, Filbert J.; Crompton, Eric J.; and Machan, Ivo, 4,319,193, Cl. 324-418.000.
Cronyn, Marshall W. Recyclable-fuel engine system. 4,318,369, Cl. 123-3.000.
Cross, Roger H., Jr. Thermal insulation system. 4,318,427, Cl. 138-149.000.
Crowley, Norman: *See*—
Fuchs, Gilbert; Crowley, Norman; and Wink, Randall, 4,318,765, Cl. 156-256.000.
CSELT Centro Studi e Laboratori Telecomunicazioni S.p.A: *See*—
Brosio, Alberto; and Seano, Vittorio, 4,319,203, Cl. 372-30.000.
Lucchini, Paolo; and Nebbia, Luciano, 4,319,084, Cl. 179-1.0SM.
CTS Corporation: *See*—
Van Benthuysen, John D.; and Osburn, Carlton M., 4,318,221, Cl. 29-622.000.
Cullum, Clifton D., Jr.; Thompson, David A.; and Worthington, Thomas K., to International Business Machines Corporation. Magnetoacoustic position sensor employing pulse code sequence generators and detectors. 4,319,189, Cl. 324-208.000.
Cummins, Mark A. Foam generating fire fighting device. 4,318,443, Cl. 169-15.000.
Cunningham, Donald M.: *See*—
Lindstrom, John A.; and Cunningham, Donald M., 4,319,127, Cl. 219-523.000.
Cunningham, Thomas W. Applicator and tampon. 4,318,404, Cl. 128-263.000.
Cunningham, William J.; Smith, Addison M.; and Wiles, Robert A., to Allied Chemical Corporation. Process for producing 1,2-dichloro-1,1,2,2-tetrafluoroethane substantially free of 1,1-dichloro-1,2,2,2-tetrafluoroethane. 4,319,060, Cl. 570-177.000.

Curley, Edward; and Muse, Herbert S., to American Can Company. Apparatus for inserting a film-wrapped package into a carton. 4,318,263, Cl. 53-116.000.

Currie, James R.; and Schansman, Raymond R., to United States of America, National Aeronautics and Space Administration. Photoelectric detection system. 4,319,133, Cl. 250-214.00B.

Curtis, William S., to Alternate Liquid Fuels Corp. Alternate liquid fuel processing apparatus. 4,318,623, Cl. 366-144.000.

Cutler, David N.: *See*—
Ermolovich, Thomas R.; Stewart, Robert E.; Leonard, Judson S.; and Cutler, David N., 4,319,323, Cl. 364-200.000.

Cutler, Donald B.; and Corey, Dennis J., to Raxnord Inc. Method of dynamically balancing a flexible torque transmission coupling. 4,318,281, Cl. 64-1.00V.

D & H Manufacturers, Inc.: *See*—
McCarthy, Dennis J., 4,318,487, Cl. 211-134.000.

Dageforde, Friedhelm: *See*—
Buschulte, Winfried; and Dageforde, Friedhelm, 4,318,688, Cl. 431-114.000.

Dahmen, Kurt: *See*—
Nowak, Rudolf; Dahmen, Kurt; and Stockhausen, Dolf, 4,318,705, Cl. 8-436.000.

Dainichiseika Color & Chemicals Mfg. Co. Ltd.: *See*—
Yamada, Shigeru; and Ikeda, Tadao, 4,319,006, Cl. 525-424.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Yamada, Mitsuhiko, 4,319,268, Cl. 358-75.000.

Daitoku, Koichi; Sakamoto, Hatsuo; Terui, Nobuhiko; Hozumi, Toshiaki; Sekine, Yoshio; Hyodo, Yukio; Ichikawa, Masanori; Wada, Masamichi; Kudo, Tsuyoshi; Nakamura, Manabu; Nakanishi, Nobuaki; Komai, Takeo; and Matsuzawa, Yoshio, to Nippon Kogaku K.K. Film rewind device in a camera. 4,318,603, Cl. 354-214.000.

Danfoss A/S: *See*—
Huelle, Zbigniew R.; and Nielsen, Leif, 4,318,529, Cl. 251-11.000.

Dangremond, Rodger L.: *See*—
Larson, Frederick R.; Dangremond, Rodger L.; Reuschel, Donald L.; and Moore, James I., 4,318,682, Cl. 425-411.000.

Daniels, Edward H. Portable intrusion alarm. 4,319,228, Cl. 340-521.000.

Danly Machine Corporation: *See*—
Sindelar, William E., 4,318,295, Cl. 72-450.000.

Data General Corporation: *See*—
Trenary, Dale T.; Frederick, Allen H.; and Whelton, Robert M., 4,318,759, Cl. 148-187.000.

Datasaab AB: *See*—
Stiernspetz, Allan, 4,318,484, Cl. 209-534.000.

Davis, Christopher K.; and Mitchell, Richard F., to U.S. Philips Corporation. Transmitter apparatus for an information transmission system. 4,319,222, Cl. 340-825.500.

Davis, Lynwood A. Insulated hanger strap. 4,318,518, Cl. 248-60.000.

Davis, Paul K., to Pacific Roller Die Co., Inc. Method for removing camber from strip. 4,318,320, Cl. 83-56.000.

Davis, Richard K.; and Jani, Ramesh N., to General Electric Company. Motor protection device. 4,319,298, Cl. 361-24.000.

Davy, Martyn W.: *See*—
Van der Kolk, Herbert C.; and Davy, Martyn W., 4,318,595, Cl. 351-160.00H.

DCA Food Industries, Inc.: *See*—
Fowler, Roscoe T., 4,318,563, Cl. 294-87.0SH.

Deal, Joseph H., Jr.: *See*—
Gupta, Shanti S.; Warner, Brady; and Deal, Joseph H., Jr., 4,319,352, Cl. 370-104.000.

de Bayser, Pierre; Fraise, Pierre; and Le Nohaic, Yves, to Thomson-CSF. Microwave filter incorporating dielectric resonators. 4,319,208, Cl. 333-204.000.

deButts, Edward H.: *See*—
Orlick, Charles A.; deButts, Edward H.; Allabashi, John C.; and Sweeney, Stanley E., 4,318,270, Cl. 60-219.000.

Decroix, Victor; Funk, Burkhard; Massonnet, Albert; Weber, Hansjorg; and Zbinden, Alain, to BBC Brown, Bovery & Company, Ltd. Movable contact unit for a direct-current, high-capacity circuit breaker. 4,319,104, Cl. 200-147.00R.

Deere & Company: *See*—
Wetrich, Peter D.; Marquart, Gordon L.; Huckler, Volker D.; and Benedek, Vasile A., 4,318,305, Cl. 74-339.000.
Willer, David A.; Rae, Rory; and Veldhoven, Gerardus A., 4,318,659, Cl. 414-511.000.

Degelman Industries Ltd.: *See*—
Degelman, Wilfred J., 4,318,524, Cl. 248-214.000.

Degelman, Wilfred J., to Degelman Industries Ltd. Bent bolt clamp. 4,318,524, Cl. 248-214.000.

DeGraaf, Douglas W., to Chicago Bridge & Iron Company. External flowline across a universal joint. 4,318,423, Cl. 137-615.000.

deHair, Johannes T. W.: *See*—
Looye, Bob; deHair, Johannes T. W.; and Bakker, Cornelis, 4,319,161, Cl. 313-486.000.

Demaire, Georges: *See*—
Berger, Michel; Lys, Jacques; and Demaire, Georges, 4,318,968, Cl. 429-105.000.

De Mattos, David N., to Codat Management Limited. Cheese cutter wherein last slice is not smaller than desired minimum. 4,318,321, Cl. 83-71.000.

Deming, Andrew F.: *See*—
Van Cleave, Stephen W.; Hank, Sam T.; and Deming, Andrew F., 4,319,102, Cl. 200-46.000.

Dennis, John R., to Halliburton Company. Acoustic well-logging transmitting and receiving transducers. 4,319,345, Cl. 367-25.000.

de Nora, Vittorio: *See*—
Bianchi, Giuseppe; de Nora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, 4,318,795, Cl. 204-290.00F.

De Panfilis, Anthony J.: *See*—
Thopsey, Floyd; and De Panfilis, Anthony J., 4,318,507, Cl. 232-35.000.

Depernet, Dominique: *See*—
Cabestany, Jean; Trouve, Claude; and Depernet, Dominique, 4,319,013, Cl. 526-287.000.

Deprez, Thomas A.; and White, Philip F., to Gleason Works, The. Gear generating machine. 4,318,648, Cl. 409-11.000.

Derks, Petrus J. A. M.; van Dommelen, Joannes H. J.; and Dieleman, Jan, to U.S. Philips Corporation. Camera tube selenium target including arsenic increasing in concentration from radiation side. 4,319,159, Cl. 313-386.000.

Deutsche Babcock Aktiengesellschaft: *See*—
Schiemichen, Peter; and Zimmermann, Werner, 4,318,640, Cl. 405-199.000.

Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See*—
Buschulte, Winfried; and Dageforde, Friedhelm, 4,318,688, Cl. 431-114.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Hensel, Jorg; Koberstein, Edgar; Bozon, Alfred; and Volker, Martin H., 4,318,894, Cl. 423-212.000.

deVos, Hendrick A. J.; and Labouliere, Elzear R., to GTE Products Corporation. Luminaire. 4,319,312, Cl. 362-282.000.

De Vrijer, Bertus, to U.S. Philips Corporation. High pressure mercury vapor discharge lamp. 4,319,157, Cl. 313-225.000.

De Winter, Koen, to COPCO, Inc. Utensil assembly. 4,318,478, Cl. 206-553.000.

Dexter, Martin: *See*—
Spivack, John D.; Dexter, Martin; and Pastor, Stephen D., 4,318,845, Cl. 524-91.000.

Diamond Shamrock Technologies S.A.: *See*—
Bianchi, Giuseppe; de Nora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, 4,318,795, Cl. 204-290.00F.

Diaz, Stephen H., to Raychem Corporation. Process for recovering heat recoverable sheet material. 4,318,220, Cl. 29-611.000.

Di Benedetto, Paulo: *See*—
Ferri, Johann W.; Gasser, Hermann; and Di Benedetto, Paulo, 4,318,206, Cl. 19-159.00R.

Dictaphone Corporation: *See*—
Meri, Kalju, 4,319,091, Cl. 179-16.0EA.
Sander, Willy M.; Boudreau, David L.; and Hohl, G. Burnell, 4,319,337, Cl. 364-900.000.

Didier Engineering GmbH: *See*—
Flockenhaus, Claus; and Hackler, Erich, 4,318,997, Cl. 518-704.000.

Diehl GmbH & Co.: *See*—
Rentzsch, Max; and Bock, Erich, 4,318,329, Cl. 89-1.816.

Dieleman, Jan: *See*—
Derks, Petrus J. A. M.; van Dommelen, Joannes H. J.; and Dieleman, Jan, 4,319,159, Cl. 313-386.000.

Digital Equipment Corporation: *See*—
Ermolovich, Thomas R.; Stewart, Robert E.; Leonard, Judson S.; and Cutler, David N., 4,319,323, Cl. 364-200.000.

Di Muzio, Nicola: *See*—
Romano, Ugo; Rivetti, Franco; and Di Muzio, Nicola, 4,318,862, Cl. 260-463.000.

Dionne, Gervais; Asselin, Andre A.; and Humber, Leslie G., to American Home Products Corporation. Hydroxyalkanamide tetrahydrocarbazoles. 4,319,029, Cl. 544-142.000.

Dobson, Charles E. Mounting device for plates. 4,318,528, Cl. 248-475.00R.

Dockray, Edward; and Hodgson, Victor F., to Imperial Chemical Industries Limited. Apparatus and method for the continuous manufacture of foam board. 4,318,761, Cl. 264-46.200.

Dodson, Robert W., to Colt Industries Operating Corp. Method and apparatus for manufacturing and forming engine induction passage venturi. 4,318,214, Cl. 29-527.600.

Dodson, Vance H., to W. R. Grace & Co. Strength enhancing admixture for concrete compositions. 4,318,744, Cl. 106-90.000.

Doerges, Alexander; Kriebel, Manfred; and Schlauer, Johann, to Metallgesellschaft, Aktiengesellschaft. Process of regenerating laden absorbents. 4,318,716, Cl. 55-48.000.

Dolhyj, Serge R.: *See*—
Velenyi, Louis J.; Dolhyj, Serge R.; and Krupa, Andrew S., 4,319,066, Cl. 585-437.000.

DoMinh, Thap, to Eastman Kodak Company. Cobalt (III) complex imaging compositions having improved photographic properties. 4,318,977, Cl. 430-336.000.

Dommer, Hans-Martin: *See*—
Bareis, Alfred; Bergmann, Ewald; and Dommer, Hans-Martin, 4,318,325, Cl. 83-530.000.

Dorman, William H.; and Smith, Jerome J., to Corning Glass Works. Cutting surface assembly. 4,318,537, Cl. 269-302.100.

Dorp, Heinz V.: *See*—
Heymanns Lothar; and Dorp, Heinz V., 4,318,293, Cl. 72-362.000.

Dorr, Wilhelm: *See*—
Bauer, Kurt; Dorr, Wilhelm; Kohler, Alfred; Krizek, Oldrich; and Prohaska, Hans, 4,318,200, Cl. 15-250.320.

Dorsch, Erich G.; and Holz, Dietrich, to Lucas Industries Limited. Wear warning indicators for friction brakes. 4,318,457, Cl. 188-1.110.

Doteuchi, Masami: *See*—
Hirai, Kentaro; Matsutani, Shigeru; Ishiba, Teruyuki; Makino, Itsuo; Doteuchi, Masami; and Otani, Koichi, 4,318,858, Cl. 260-347.200.
Doukakis, Harry W.; and Black, Robert E., Jr., to Thiokol Corporation. Igniter and gas generator for rocket motor. 4,318,271, Cl. 60-232.000.
Dow Chemical Company, The: *See*—
Boozalis, Theodore S.; Ivy, John B.; and Willis, Gordon G., 4,319,062, Cl. 570-220.000.
Friedli, Hans R.; Nelson, Donald L.; and Massingill, John L., Jr., 4,319,009, Cl. 526-62.000.
Ishibe, Nobuyuki, 4,319,059, Cl. 568-947.000.
Lowery, Kirby, Jr.; Knight, George W.; and May, James A., Jr., 4,319,011, Cl. 526-137.000.
Dow, John, Jr.; Oetting, William A.; Yessian, Richard J.; and Brady, Thomas J., to Lockheed Electronics Co., Inc. Microprocessor controlled dispensing metering apparatus. 4,319,128, Cl. 235-61.0PD.
Doyle, Gerald, to Exxon Research & Engineering Co. Copper complex as catalyst for formate ester decarbonylation. 4,319,050, Cl. 568-671.000.
Doyle, James E.; and Lembke, Russell B., to Quaker Oats Company, The. Binders for foundry core sands. 4,318,840, Cl. 523-144.000.
Dozier Equipment International Company: *See*—
Helm, J. Thomas, 4,318,661, Cl. 414-607.000.
Dragerwerk Aktiengesellschaft: *See*—
Oetjen, Georg-Wilhelm; and Benthin, Frank, 4,318,398, Cl. 128-201.130.
Dragoco Gerberding & Co GmbH: *See*—
Klein, Erich; and Brunke, Ernst J., 4,318,831, Cl. 252-522.00R.
Draloric Electronic GmbH: *See*—
Fink, Rudolf, 4,319,304, Cl. 361-307.000.
Dresser Industries, Inc.: *See*—
Beilke, Reuben M., 4,318,292, Cl. 72-356.000.
Drexler, Jerome, to Drexler Technology Corporation. Optical data storage and recording medium having a replaceable protective coverplate. 4,319,252, Cl. 346-135.100.
Drexler Technology Corporation: *See*—
Drexler, Jerome, 4,319,252, Cl. 346-135.100.
Dreyer, Stephen F.: *See*—
Hoff, Marcian E., Jr.; Townsend, Marshall A.; and Dreyer, Stephen F., 4,319,325, Cl. 364-200.000.
Driemeyer, Manfred, to Mannesmann DeMag AG. Method for manufacturing steel from iron ore dust by direct reduction. 4,318,736, Cl. 75-38.000.
Drozd, Otto, to Wollard Aircraft Equipment, Inc. Conveyance loader drive and steering system. 4,318,197, Cl. 14-71.500.
Drozd, Otto, to Wollard Aircraft Equipment, Inc. Conveyance loader wheel position indicator. 4,318,198, Cl. 14-71.500.
Drubeck, David S.; and Morrett, Malcolm K., to Drubeck, David S.; and Morrett, Malcolm K. Magnetic tape apparatus and method. 4,319,291, Cl. 360-92.000.
Duell, Richard J.: *See*—
Cann, Peter L.; Duell, Richard J.; and Casler, Donald J., 4,318,277, Cl. 62-278.000.
Duffey, Joseph G., to ANDCO Environmental Processes, Inc. Chromate recovery process. 4,318,788, Cl. 204-149.000.
Dumont, Claude: *See*—
Nedelec, Lucien; Pierdet, Andre; and Dumont, Claude, 4,318,910, Cl. 424-248.400.
Dunagan, Ted O.: *See*—
Kirkwood, Creal E.; and Dunagan, Ted O., 4,318,701, Cl. 440-51.000.
Duncan, William J., to Du Pont de Nemours, E. I., and Company. Venting process for organic heat transfer media. 4,318,690, Cl. 432-41.000.
Dunlop Limited: *See*—
Shrimpton, Ronald H.; and Cooney, Peter L., 4,318,875, Cl. 264-54.000.
Dunlop, William R.; and Pentz, William J., to Quaker Oats Company, The. Low fire hazard rigid urethane insulation foam, polyol mixtures used in the manufacture thereof, and method for manufacture thereof. 4,318,999, Cl. 521-171.000.
Du Pont de Nemours, E. I., and Company: *See*—
Cherkofsky, Saul C.; and Boswell, George A., Jr., 4,318,917, Cl. 424-274.000.
Duncan, William J., 4,318,690, Cl. 432-41.000.
Horowitz, Samuel J., 4,318,830, Cl. 252-519.000.
Duracell International Inc.: *See*—
Pope, Peter J.; and Willis-Owen, Richard B., 4,319,122, Cl. 219-121.0LC.
Dvoracek, Louis M.; Fischer, Paul W.; and Skripek, Milan, to Union Oil Company of California. Process and compositions for reducing fouling of heat exchange surfaces. 4,319,063, Cl. 585-4.000.
Dynamit Nobel Aktiengesellschaft: *See*—
Peeters, Hermann; Prange, Uwe; and Vogt, Wilhelm, 4,319,024, Cl. 542-413.000.
Spielau, Paul; Kuhnel, Werner; Welsch, Dietmar; Klingberg, Gerd; Konermann, Hans E.; and Leeder, Wilfried, 4,319,001, Cl. 525-70.000.
Spielau, Paul; Kuhnel, Werner; Welsch, Dietmar; Klingberg, Gerd; Konermann, Hans E.; and Leeder, Wilfried, 4,319,004, Cl. 525-211.000.
Spielau, Paul; Kuhnel, Werner; Welsch, Dietmar; Klingberg, Gerd; Konermann, Hans E.; and Leeder, Wilfried, 4,319,005, Cl. 525-240.000.
E. H. Wachs Company, The: *See*—
Wachs, Edward H.; and Kwech, Horst, 4,318,391, Cl. 125-14.000.
Eagle Sheet Metal Mfg. Company: *See*—
Redlich, William R., 4,318,575, Cl. 312-250.000.
East, Anthony J.; and Calundann, Gordon W., to Celanese Corporation. Polyester of 6-hydroxy-2-naphthoic acid, para-hydroxy benzoic acid, terephthalic acid, and resorcinol capable of readily undergoing melt processing to form shaped articles having increased impact strength. 4,318,841, Cl. 524-605.000.
East, Anthony J.; and Calundann, Gordon W., to Celanese Corporation. Polyester of 6-hydroxy-2-naphthoic acid, aromatic diol, and 1,4-cyclohexanedicarboxylic acid capable of undergoing melt processing. 4,318,842, Cl. 524-605.000.
Eastman Kodak Company: *See*—
Adamski, Henry S.; and Hartman, John F., 4,318,555, Cl. 283-7.000.
Altmann, Conrad; and Feathers, Edgar M., 4,318,542, Cl. 271-290.000.
DoMinh, Thap, 4,318,977, Cl. 430-336.000.
Henry, James W., 4,319,272, Cl. 358-107.000.
Martin, William A., 4,318,601, Cl. 354-86.000.
Tyan, Yuan-Sheng, 4,319,069, Cl. 136-258.000.
Eaton Corporation: *See*—
Lujic, Ante, 4,319,126, Cl. 219-512.000.
Eaton, Homer L., to Eaton Leonard Corporation. Pipe cutting method and apparatus. 4,318,289, Cl. 72-131.000.
Eaton Leonard Corporation: *See*—
Eaton, Homer L., 4,318,289, Cl. 72-131.000.
Eaton Stamping Company: *See*—
Hamman, Lyle J., 4,318,573, Cl. 308-72.000.
Ebauches Electroniques S.A.: *See*—
Fatton, Jean-Claude, 4,319,350, Cl. 368-22.000.
Eberhart, Clem W.; and Zwillich, Alexander, to Westinghouse Electric Corp. Lamp socket mounting and adjusting assembly. 4,319,313, Cl. 362-370.000.
Ebert, Michael: *See*—
Pilipski, Mark, 4,318,710, Cl. 44-1.00F.
Echtler, Helmut; and Wimmer, Peter, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Automatic ammunition loading apparatus for an armored vehicle. 4,318,331, Cl. 89-46.000.
Eckels, Phillip W., to Electric Power Research Institute, Inc. Superconducting generator with improved thermal transient response. 4,319,149, Cl. 310-52.000.
Eckhardt, David A.: *See*—
Lahoda, Edward J.; Eckhardt, David A.; and Grover, Donald L., 4,318,786, Cl. 204-141.500.
Edahiro, Takao; Tanaka, Gotaro; Kuwahara, Toru; and Kyoto, Michihisa, to Nippon Telegraph & Telephone Public Corp.; and Sumitomo Electric Industries. Process for producing optical fiber preform. 4,318,726, Cl. 65-18.200.
Edelbrock Corp.: *See*—
McFarland, James D., 4,318,371, Cl. 123-52.00M.
Edelman, William; Hitchcock, James R., Jr.; and Schnell, William J., to Baxter Travenol Laboratories, Inc. Membrane plasmapheresis module. 4,318,813, Cl. 210-321.400.
Edwards, Dean B.: *See*—
Rippel, Wally E.; and Edwards, Dean B., 4,319,318, Cl. 363-138.000.
Egbers, Gerhard; Artzt, Peter; Brosch, Karl; and Rottmayr, Hans, to Schubert and Salzer. Process and apparatus for piecing-up a wrap yarn. 4,318,269, Cl. 57-18.000.
Eggert, Carl A., to Sabre Products, Inc. Postage cost recording system. 4,319,328, Cl. 364-466.000.
Eheim, Franz, to Robert Bosch GmbH. Regulator apparatus for a fuel injection pump. 4,318,378, Cl. 123-357.000.
Eheim, Franz; Konrath, Karl; Schwarz, Manfred; and Weiss, Otmar, to Robert Bosch GmbH. Fuel injection pump. 4,318,382, Cl. 123-502.000.
Eide, Ralph M. Wheel assembly for boats. 4,318,196, Cl. 114-344.000.
Elbaum, Charles; and Cooper, Leon N., to Nestor Associates. Curve follower. 4,319,331, Cl. 364-515.000.
Electric Power Research Institute, Inc.: *See*—
Eckels, Phillip W., 4,319,149, Cl. 310-52.000.
Kimblin, Clive W.; Holmes, Francis A.; Heberlein, Joachim V. R.; Gorman, Joseph G.; and Slade, Paul G., 4,319,296, Cl. 361-4.000.
Electroplating Engineers of Japan, Limited: *See*—
Ando, Masato; Yamamoto, Kenji; and Taniguchi, Kazuhiro, 4,318,793, Cl. 204-198.000.
Elger, Adolf, to Carl Zeiss-Stiftung. Apparatus for exposure control for microphotography. 4,318,599, Cl. 354-51.000.
Eli Lilly and Company: *See*—
Herron, David K.; and Lunn, William H. W., 4,319,028, Cl. 544-26.000.
Lacefield, William B., 4,318,911, Cl. 424-249.000.
Robey, Roger L.; and Smirz, Jeffrey C., 4,318,866, Cl. 260-544.00D.
Elmovist, Hakan, to Siemens Aktiengesellschaft. Heart pacemaker. 4,318,411, Cl. 128-419.0PG.
Elterman, Paul B., to Ford Aerospace & Communications Corp. Polarization switched image rotator. 4,318,591, Cl. 350-374.000.
Emerson Electric Co.: *See*—
Bethel, Vernon V., 4,318,809, Cl. 210-117.000.
Lindstrom, John A.; and Cunningham, Donald M., 4,319,127, Cl. 219-523.000.
Roddy, Joseph T.; and Butler, William R., 4,319,150, Cl. 310-89.000.

Rogers, Gerald L.; and Schulte, Ronald B., 4,318,201, Cl. 15-250.350.

Endo, Akira: *See*—
Hirota, Yukitsugu; Kaneko, Yoichi; Sekine, Kenji; Endo, Akira; and Kimura, Katsuhiro, 4,319,244, Cl. 343-8.000.

Engdahl, Jonathan R.: *See*—
Grudowski, Raymond A.; and Engdahl, Jonathan R., 4,319,338, Cl. 364-900.000.

Engelhart, Harold J. Scribing compass for marking logs for notching and fitting. 4,318,226, Cl. 33-41.00E.

Enomoto, Satoru; Asano, Kiro; Tamura, Humio; and Tanaka, Hiromitsu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Methylated prostaglandin derivatives. 4,318,908, Cl. 424-243.000.

Erickson, Allen O.; and Thomas, Howard W., to J. I. Case Company. Backhoe coupling device. 4,318,662, Cl. 414-686.000.

Ericson, John E.; and Mahnke, Earl, to Ericson Manufacturing Company, The. Electrical connector with ground fault detector. 4,318,578, Cl. 339-14.00P.

Ericson, Kurt S. B. Devices used for the connection of pipes. 4,318,547, Cl. 277-207.00A.

Ericson Manufacturing Company, The: *See*—
Ericson, John E.; and Mahnke, Earl, 4,318,578, Cl. 339-14.00P.

Ericsson, Ricky, to Inter-Ikea A/S. Hinge device for connecting two furniture portions. 4,318,568, Cl. 297-354.000.

Eriksson, Kjell-Ivan. Device for lifting animals. 4,318,365, Cl. 119-100.000.

Erkfritz, Donald S., to General Electric Company. Adjustable insert seat and wedge assembly for an indexable boring cutter. 4,318,647, Cl. 408-153.000.

Ermolovich, Thomas R.; Stewart, Robert E.; Leonard, Judson S.; and Cutler, David N., to Digital Equipment Corporation. Communications device for data processing system. 4,319,323, Cl. 364-200.000.

Erpenbach, Heinz: *See*—
Kubbeler, Hans-Klaus; Erpenbach, Heinz; Gehrmann, Klaus; and Kohl, George, 4,319,038, Cl. 560-232.000.

Etablissement Rinrone: *See*—
Llopart, Jean-Paul, 4,318,906, Cl. 424-195.000.

Evana Tool & Engineering Co.: *See*—
Fuchs, Gilbert; Crowley, Norman; and Wink, Randall, 4,318,765, Cl. 156-256.000.

Evans, Gary E.; and Hoover, William F., Jr., to Westinghouse Electric Corp. Method and antenna for improved sidelobe performance in dipole arrays. 4,319,249, Cl. 343-703.000.

Evans, Robert M.; and Leonard, Thomas M. Low-modulus polyurethane joint sealant. 4,318,959, Cl. 428-364.000.

Evans, Susan D., to RJR Foods, Inc. Electronic control system for a pouch packaging machine. 4,318,431, Cl. 141-90.000.

Ewing, Neal L.; and Fisher, John J., to Foremost-McKesson, Inc. Instant milk process. 4,318,932, Cl. 426-285.000.

Ex-Cell-O Corporation: *See*—
Larson, Frederick R.; Dangremond, Rodger L.; Reuschel, Donald L.; and Moore, James I., 4,318,682, Cl. 425-411.000.
Lisiecki, Robert E., 4,318,479, Cl. 206-633.000.

Exxon Research & Engineering Co.: *See*—
Canevari, Gerard P., 4,318,671, Cl. 416-90.00A.
Doyle, Gerald, 4,319,050, Cl. 568-671.000.
Halluin, Albert P.; and Barnett, Allan E., 4,318,829, Cl. 252-466.00J.
Hartman, G. William, Jr.; and Schley, Ronald F., 4,319,282, Cl. 358-286.000.
Irani, Cyrus A.; Cozewith, Charles; and Kasegrande, Stephen S., 4,319,021, Cl. 528-498.000.
Lang, Robert J.; and Pabst, Joanne K., 4,318,712, Cl. 48-202.000.
McVicker, Gary B., 4,318,826, Cl. 252-431.00P.
Ver Strate, Gary; and Baldwin, Francis P., 4,319,061, Cl. 570-191.000.

Ezell, Charles R. Equipment trailer with shiftable trailer bed. 4,318,656, Cl. 414-471.000.

Falb, Richard D.; Stiso, Sisto N.; Wang, Yung-Chyung; White, William I.; and White-Stevens, Rodric H., to Miles Laboratories, Inc. Test means, test device and method for determining the ionic strength or specific gravity of a liquid sample. 4,318,709, Cl. 23-230.00R.

Falk, Heinz; Hoffman, Erwin; and Ludke, Christian, to Jenoptik Jena GmbH. Emission spectral analysis device. 4,318,614, Cl. 356-311.000.

Fallos, George: *See*—
Orsinger, Winston A.; and Fallos, George, 4,318,265, Cl. 53-492.000.

Fantuzzo, Joseph: *See*—
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Farkas, Daniel F.: *See*—
Robertson, George H.; and Farkas, Daniel F., 4,318,415, Cl. 130-8.000.

Farrer-Halls, James A., to BOC Limited. Gas-operated motors. 4,318,274, Cl. 60-671.000.

Farrer, Michael; and Perryman, Raymond A. G., to Gould Advance Limited. Controlled power supply apparatus. 4,319,316, Cl. 363-41.000.

Fassauer, Arthur L. Animal extermination trap. 4,318,241, Cl. 43-58.000.

Fatton, Jean-Claude, to Ebauches Electroniques S.A. Electronic watch. 4,319,350, Cl. 368-22.000.

Faulkner, Norman K.: *See*—
Bayer, Alfred M.; Faulkner, Norman K.; and Lasocki, Christine, 4,318,193, Cl. 4-222.000.

Fawcett, Richard, to Imperial Chemical Industries Limited. Welded structures. 4,318,966, Cl. 428-683.000.

Feathers, Edgar M.: *See*—
Altmann, Conrad; and Feathers, Edgar M., 4,318,542, Cl. 271-290.000.

Fechter, Leonhard; and Nudinger, Gunter, to Passavant-Werke Michelbacher Hutte. Screw pump for conveying waste water and the like. 4,318,670, Cl. 415-72.000.

Federal Signal Corporation: *See*—
Stanuch, Edward S., 4,319,306, Cl. 362-35.000.

Felder, Louis; Kirchmayr, Rudolf; and Husler, to Ciba-Geigy Corporation. Use of aromatic-aliphatic ketones as photo sensitizers. 4,318,791, Cl. 204-159.230.

Feldstein, Nathan, to Surface Technology, Inc. Dispersions for activating non-conductors for electroless plating. 4,318,940, Cl. 427-98.000.

Felter, John V. Louver structure. 4,318,338, Cl. 98-121.00R.

Fenneman, David B.: *See*—
Bush, John E.; Fenneman, David B.; and Smith, Ronald E., 4,319,201, Cl. 372-58.000.

Ferri, Johann W.; Gasser, Hermann; and Di Benedetto, Paulo, to Luwa AG. Coiler arrangement. 4,318,206, Cl. 19-159.00R.

Fest, Christa; Kraus, Peter; and Scheinpflug, Hans, to Bayer Aktiengesellschaft. Combating bacteria with N-cycloalkyl-N'-substituted-N'-acyl-ureas. 4,318,924, Cl. 424-322.000.

Fiat Auto S.p.A: *See*—
la Rocca, Aldo Vittorio, 4,319,120, Cl. 219-121.0FS.

Fink, Rudolf, to Draloric Electronic GmbH. Tubular capacitor with axial connections. 4,319,304, Cl. 361-307.000.

Finney, Roy P., to Medical Engineering Corporation. Penile prosthesis. 4,318,396, Cl. 128-79.000.

Firecom, Inc.: *See*—
Kirkor, Gabriel, 4,319,229, Cl. 340-521.000.

Firestone Tire & Rubber Company, The: *See*—
Shurman, Louis W., 4,318,436, Cl. 152-353.00R.

Fischer, Horst, to Sew-Eurodrive GmbH and Co. Suddeutsche Elektromotoren-Werke. Centering apparatus for toothed drives. 4,318,306, Cl. 74-433.000.

Fischer, Paul W.: *See*—
Dvoracek, Louis M.; Fischer, Paul W.; and Skripek, Milan, 4,319,063, Cl. 585-4.000.

Fish, Leonard A., to Avco Investment Management Corporation. Automatic teller machine. 4,318,354, Cl. 109-59.000.

Fishbaugh, Warren D.; Batty, W. Lawson, Jr.; and Freedman, Frank J., to Sybron Corporation. Apparatus for molding indicia in roto-molded plastic containers. 4,318,683, Cl. 425-429.000.

Fisher Controls International, Inc.: *See*—
Carpenter, James E.; and Goody, Brian A., 4,319,147, Cl. 307-442.000.

Fisher, John J.: *See*—
Ewing, Neal L.; and Fisher, John J., 4,318,932, Cl. 426-285.000.

Fishwick, Brian R.: *See*—
Austin, Peter W.; and Fishwick, Brian R., 4,318,851, Cl. 260-158.000.

Fisons-Western Peat Moss, Ltd.: *See*—
Muldner, Lawrence C., 4,318,248, Cl. 47-56.000.

Fitz, Philip J., to Marconi Company Limited, The. Radar systems. 4,319,246, Cl. 343-17.10R.

Fitzjarrell, Gerald M., to Takena Industries, Inc. Wind fairing device. 4,318,566, Cl. 296-1.00S.

Fitzner, Arthur O., to Brunswick Corporation. External pulse controlled spark advance unit for an internal combustion engine ignition system. 4,318,387, Cl. 123-602.000.

Flam, Richard P., to American Electronic Laboratories, Inc. Integrated spiral antenna-detector device. 4,319,248, Cl. 343-701.000.

Fleisher, Larry D.; and Mayala, Arne H., to Minnesota Mining and Manufacturing Company. Hand applied rotary connector. 4,318,580, Cl. 339-98.000.

Fliege, Werner: *See*—
Rebafka, Walter; Heilen, Gerd; and Fliege, Werner, 4,319,055, Cl. 568-856.000.

Flockenhaus, Claus; and Hackler, Erich, to Thyssengas GmbH; and Didier Engineering GmbH. Process and apparatus for multi-stage catalytic methanization of gases. 4,318,997, Cl. 518-704.000.

Florent, Gerard: *See*—
Lobmann, Michele; and Florent, Gerard, 4,318,903, Cl. 424-89.000.

Flower, Roderick J.: *See*—
Cardinal, David C.; and Flower, Roderick J., 4,319,194, Cl. 324-449.000.

Fogarty, A. Edward; and Fogarty, Bonnie R. Launching device using pinching force. 4,318,388, Cl. 124-10.000.

Fogarty, Bonnie R.: *See*—
Fogarty, A. Edward; and Fogarty, Bonnie R., 4,318,388, Cl. 124-10.000.

Fogarty, Thomas J.: *See*—
Chin, Albert K., 4,318,410, Cl. 128-325.000.

Fogoros, Robert J.: *See*—
Brannan, Robert C.; Fogoros, Robert J.; Headrick, Michael R.; Krumins, Ainis; and Pryor, Robert F., 4,318,612, Cl. 355-14.0FU.

Fogwell, J. Wray: *See*—
Showalter, M. Robert; Clark, John M., Jr.; and Fogwell, J. Wray, 4,318,868, Cl. 261-41.00D.

Ford Aerospace & Communications Corp.: *See*—
Elterman, Paul B., 4,318,591, Cl. 350-374.000.

Ford, Alan A., to Kirsch Company. Cabinet assembly. 4,318,576, Cl. 312-264.000.

Ford Motor Company: *See—*
Bilenchi, Robert; and Trudeau, Edgar G., 4,318,569, Cl. 297-379.000.
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Fordath Limited: *See—*
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Foremost-McKesson, Inc.: *See—*
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Forma S.A Moveis e Objetos de Arte: *See—*
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Foroni, Mario: *See—*
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Forster, Siegfried; and Sack, Berthold, to Kernforschungsanlage Julich GmbH. Burner for liquid fuels. 4,318,689, Cl. 431-208.000.
Fortmeyer, George W. Retractable wheel attachment for boat lift. 4,318,632, Cl. 405-3.000.
Foshee, William R.: *See—*
Best, Walter E.; and Foshee, William R., 4,318,558, Cl. 292-173.000.
Foster, Peter W.; Berry, Thomas; and Murenbeeld, Karel, to John Heathcoat & Company Limited. Apparatus for heating and drawing of synthetic filaments. 4,318,210, Cl. 28-246.000.
Fowler, Eugene W.; and Fowler, Raymond W. Radio alarm system. 4,319,230, Cl. 340-539.000.
Fowler, Raymond W.: *See—*
Fowler, Eugene W.; and Fowler, Raymond W., 4,319,230, Cl. 340-539.000.
Fowler, Roscoe T., to DCA Food Industries, Inc. Extractor bar. 4,318,563, Cl. 294-87.0SH.
Fraise, Pierre: *See—*
de Bayser, Pierre; Fraise, Pierre; and Le Nohaic, Yves, 4,319,208, Cl. 333-204.000.
Frame, Robert R. Catalytic composite, and method of manufacture. 4,318,825, Cl. 252-428.000.
Franczyk, John A.; Hamm, Willard C.; and White, Russell T., Jr., to International Business Machines Corporation. Tinted metallized recording medium. 4,319,255, Cl. 346-163.000.
Frederick, Allen H.: *See—*
Trenary, Dale T.; Frederick, Allen H.; and Whelton, Robert M., 4,318,759, Cl. 148-187.000.
Freedman, Frank J.: *See—*
Fishbaugh, Warren D.; Batty, W. Lawson, Jr.; and Freedman, Frank J., 4,318,683, Cl. 425-429.000.
Freedman, Robert P.: *See—*
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French, Edward C.: *See—*
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Friedli, Hans R.; Nelson, Donald L.; and Massingill, John L., Jr., to Dow Chemical Company, The. Cycloaliphatic acrylate compositions. 4,319,009, Cl. 526-62.000.
Friedman, Abraham; and Welsch, John H., to Metropolitan Wire Corporation. Adjustable shelving having a spiral engagement arrangement. 4,318,352, Cl. 108-111.000.
Friedrich, James F., to Nalco Chemical Company. Corrugated shipping container for viscous refractory slurries and discharge apparatus therefor. 4,318,497, Cl. 222-83.000.
Fritz Bauer & Sohne oHG: *See—*
Bauer, Fritz, 4,318,536, Cl. 267-64.120.
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Fuchs, Gilbert; Crowley, Norman; and Wink, Randall, to Evana Tool & Engineering Co. Laminate applying machine and method. 4,318,765, Cl. 156-256.000.
Fuchs, Rainer; Naumann, Klaus; Riebel, Hans-Jochem; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating pests with fluorine-substituted 2,2,3,3-tetramethylcyclopropane-1-carboxylic acid benzyl esters. 4,318,922, Cl. 424-304.000.
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Fukuhara, Toru; Ogasawara, Akira; and Kimura, Makoto, to Nippon Kogaku K.K. Automatic focusing device in a camera. 4,318,598, Cl. 354-23.00D.
Fukui, Hiroshi; and Amano, Hisao, to Hitachi, Ltd.; and Hitachi Metals, Ltd. D.C. Power supply. 4,319,317, Cl. 363-124.000.
Fukui, Masaru: *See—*
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Fukushima, Toshitaka; Koyama, Kazumi; Ueno, Kouji; Miyamura, Tamio; and Kawabata, Yuichi, to Fujitsu Limited. Programming circuit for permanently storing data in a programmable read only memory. 4,319,341, Cl. 365-94.000.
Fukushima, Toshitaka: *See—*
Napiorkowski, John; Jones, Raymond D.; Fukushima, Toshitaka; Koyama, Kazumi; Ueno, Kouji; Miyamura, Tamio; and Kawabata, Yuichi, 4,319,300, Cl. 361-119.000.
Fukuyama, Keiji: *See—*
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Funk, Burkhard: *See—*
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Furedi, Ervin J.; and Blodgett, Richard E. Ratchet wrench assembly. 4,318,314, Cl. 81-57.290.
Furnier-u. Sperrholzwerk, J. F. Werz, Jr. KG, Werzalit-Pressholzwerk: *See—*
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Furr, Danny L., to Phillips Petroleum Co. Fractional distillation column control. 4,319,330, Cl. 364-501.000.
Fushida, Mineto: *See—*
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Gagliani, John; and Long, John V., to International Harvester Company. Closed cell polyimides. 4,319,000, Cl. 521-189.000.
Galasan, Felixberto A., to Pullman Incorporated. Railway car end doors. 4,318,349, Cl. 105-378.000.
Gall, Arthur; and Marhoff, Paul, to Siemens Aktiengesellschaft. Television image recording apparatus. 4,319,281, Cl. 358-244.000.
Gallagher, James A.; and Brizgys, Bernardas, to BASF Wyandotte Corporation. Polyurethane sealant compositions. 4,318,838, Cl. 524-444.000.
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Gane, Brian R.; and Stewart, David G., to British Petroleum Company Limited, The. Process for the hydrocarbonylation of methanol to ethanol in the presence of an inert liquid. 4,319,056, Cl. 568-902.000.
Gangulee, Amitava; Ho, Paul S.; Howard, James K.; and Miller, Robert J., to International Business Machines Corporation. Nickel-gold-nickel conductors for solid state devices. 4,319,264, Cl. 357-71.000.
Ganowski, Franz-Josef: *See—*
Pache, Norbert; Ganowski, Franz-Josef; and Mazac, Karel, 4,319,123, Cl. 219-123.000.
Gardlund, Zachariah G., to General Motors Corporation. Poly(methyl methacrylate) polycarbonate block copolymers. 4,319,003, Cl. 525-148.000.
Gartner, Johann, to Silhouette-Modellbrillen Frabrikationsgesellschaft m.b.H. Molding workpieces comprising a metal core embedded in plastic material. 4,318,879, Cl. 264-163.000.
Gartside, Robert J.: *See—*
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Garwood, Gerald J.; and Swenson, Evelyn M., to Post Office. Method of determining existing service capabilities of telephone exchange equipment. 4,319,090, Cl. 179-8.00A.
Gasser, Hermann: *See—*
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Gaylord, Thomas K.: *See—*
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Geluk, Ronald J., to N.V. Optische Industrie De Oude Delft. Method of recording image information on the target of a scan converter tube. 4,319,274, Cl. 358-140.000.
Gemperlein, Heinz: *See—*
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General Dynamics, Pomona Division: *See—*
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Moss, David E.; Stone, Karl E.; Bright, Charles A., Jr.; and Rusch, Randy A., 4,318,936, Cl. 427-38.000.
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Gerking, Luder; and Panke, Gunter, to Karl Fischer Industrieanlagen GmbH. Device for spinning endless filaments. 4,318,676, Cl. 425-72.00S.
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Getts, Sidney A. Cutting tool with adjustable depth control foot. 4,318,224, Cl. 30-377.000.
Ghosh, Sambhunath; and Klass, Donald L., to Institute of Gas Technology. Two phase anaerobic digester system. 4,318,993, Cl. 435-299.000.
Gibert, Pierre. Self-stabilizing load lifting and handling vehicle. 4,318,664, Cl. 414-719.000.
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Gillett, John E.; Isherwood, John; Hann, Richard A.; Norton-Berry, Philip; and Steel, Margaret L., to Imperial Chemical Industries Limited. Coating of solids. 4,318,941, Cl. 427-212.000.
Gilloire, Andre; and Zurcher, Jean. Adaptive prediction differential-PCM transmission method and circuit using filtering by sub-bands and spectral analysis. 4,319,082, Cl. 179-1.05A.
Girgis, Adly A.; and Ham, Fredric M., to Iowa State University Research Foundation, Inc. Frequency measuring and monitoring apparatus, methods and systems. 4,319,329, Cl. 364-484.000.
Gist-Brocades N.V.: *See—*
Heitman, Herwarth; van der Drift, Johannes K.; Leenderts, Everardus J. A. M.; and Grootveld, Herman H., 4,318,852, Cl. 260-239.100.
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Givaudan Corporation: *See—*
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GK Technologies, Incorporated: *See—*
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Glatt, Werner: *See—*
Grab, Erwin; and Glatt, Werner, 4,318,771, Cl. 159-16.00R.
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Goff, David W. Method of producing humic acid. 4,319,041, Cl. 562-475.000.
Goldman, Jerome N.; Goldman, Marvin A.; and Phillips, Gerald, to Penn-Plax Plastics, Inc. Underwater aquarium decoration assembly. 4,318,945, Cl. 428-15.000.
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Grab, Erwin; and Glatt, Werner, to Glatt Maschinen-und Apparatebau AG. Device for the formation of granulated or agglomerated substances. 4,318,771, Cl. 159-16.00R.
Grabener, Karl-Heinz: *See—*
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Grace, Robert E., to Xerox Corporation. Control system for an electrophotographic printing machine. 4,318,610, Cl. 355-14.00D.
Grain Processing Corporation: *See—*
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Gram, Hans, to Brodrene Gram A/S. Freezing or cooling plant comprising an oil separator. 4,318,279, Cl. 62-470.000.
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Granda, Edward J.: *See—*
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Grass Valley Group, Inc., The: *See—*
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Gravert, William H., to Marine Moisture Control Company, Inc. Device for determining physical qualities of pressurized container contents. 4,318,227, Cl. 33-126.500.

Green, Robert W. Grass edging device. 4,318,267, Cl. 56-13.700.

Greenmeadow Engineers Limited: *See—*
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Griesenbrock, Karl-Heinz, to Jungheinrich Unternehmensverwaltung KG, Firma. Chassis drive arrangements for electrically driven mobile working machines. 4,318,450, Cl. 180-212.000.

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Grillo, Richard J.: *See—*
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Grover, Donald L.: *See—*
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Gruber, Robert J.: *See—*
Pacansky, Thomas J.; Gruber, Robert J.; and Knapp, John F., 4,318,974, Cl. 430-108.000.

Grudowski, Raymond A.; and Engdahl, Jonathan R., to Allen-Bradley Company. Industrial communications network with mastership determined by need. 4,319,338, Cl. 364-900.000.

Grumman Aerospace Corporation: *See—*
Markow, Edward G., 4,318,434, Cl. 152-156.000.

GTE Laboratories Incorporated: *See—*
Peled, Emanuel; and Lombardi, Anthony, 4,318,969, Cl. 429-105.000.

GTE Products Corporation: *See—*
Bienvenue, Roland L.; and Walton, Herbert L., 4,319,156, Cl. 313-113.000.
deVos, Hendrick A. J.; and Labouliere, Elzear R., 4,319,312, Cl. 362-282.000.
Seidel, Heinz H., 4,318,644, Cl. 407-114.000.

GTI Corporation: *See—*
Chason, Kenneth R., 4,319,118, Cl. 219-118.000.

Guagliardo, Matthew, to Inmont Corporation. Water reducible coating compositions of acrylic-urethane polymers. 4,318,833, Cl. 524-457.000.

Guest, Clark C.; and Gaylord, Thomas K., to Georgia Tech Research Institute. Optical holographic content-addressable memory system for truth table look-up processing. 4,318,581, Cl. 350-3.740.

Guibord, Ronald D.; Harman, Neil W.; and Hennessy, Richard E., to Honeywell Information Systems Inc. Purge control for automatic note dispenser. 4,319,132, Cl. 235-379.000.

Guilliams, Charles M. Locking pliers for gripping threaded hanger rods. 4,318,316, Cl. 81-425.00A.

Gulf Oil Corporation: *See—*
Hedrich, Loren W.; Patel, Natu R.; and Kirkpatrick, Joel L., 4,319,026, Cl. 542-419.000.

Gulf Research & Development Company: *See—*
Austin, Richard G.; Beach, David L.; and Pellegrini, John P., Jr., 4,319,065, Cl. 585-255.000.
Lese, Henri K.; Sebulsky, Raynor T.; Stanulonis, John J.; Tabacek, Joseph A.; and Vogel, Roger F., 4,318,801, Cl. 208-216.00R.

Gunjima, Tomoki; and Takeshita, Isamu, to Ashai Glass Company, Limited. Method of bonding cation exchange membrane of fluorinated polymer. 4,318,785, Cl. 204-98.000.

Gupta, Shanti S.; Warner, Brady; and Deal, Joseph H., Jr., to Communications Satellite Corporation. TIM Bus structure. 4,319,352, Cl. 370-104.000.

Gurry, George W. Frequency sensing device for reducing non-periodic components. 4,319,334, Cl. 364-574.000.

Gurtner, Mark A.; and Gorman, Charles D., to Bethlehem Steel Corporation. Culvert structure having corrugated ribbing support. 4,318,635, Cl. 405-126.000.

Gurvich, Yakov A.: *See—*
Styskin, Evgeny L.; Gurvich, Yakov A.; Kumok, Simona T.; Starikova, Olga F.; Rutman, Grigory I.; Michurov, Jury I.; Yanshevsky, Vladimir A.; Gusev, Vladimir K.; and Liakumovich, Alexandr G., 4,319,052, Cl. 568-727.000.

Gusev, Vladimir K.: *See—*
Styskin, Evgeny L.; Gurvich, Yakov A.; Kumok, Simona T.; Starikova, Olga F.; Rutman, Grigory I.; Michurov, Jury I.; Yanshevsky, Vladimir A.; Gusev, Vladimir K.; and Liakumovich, Alexandr G., 4,319,052, Cl. 568-727.000.

Guthier, Ralph E. Observation device. 4,318,567, Cl. 297-184.000.

Gutzwiller, Howard L., to Robinson Industries, Inc. Axial fan turning diffuser. 4,318,693, Cl. 432-201.000.

Haag, Donald L.: *See—*
Woods, Lee O.; and Haag, Donald L., 4,319,299, Cl. 361-24.000.

Haberlein, Harald: *See—*
Wiezer, Hartmut; Pfahler, Gerhard; Haberlein, Harald; and Nowy, Gunther, 4,319,030, Cl. 546-19.000.

Habu, Takeshi; and Honda, Chika, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic material. 4,318,979, Cl. 430-434.000.

Hackett, Kenneth R., to Pittway Corporation. Ultrasonic intrusion detection system. 4,319,349, Cl. 367-94.000.

Hackler, Erich: *See—*
Flockenhaus, Claus; and Hackler, Erich, 4,318,997, Cl. 518-704.000.

Haglof, Sven: *See—*
Lissmyr, Per O.; and Haglof, Sven, 4,318,530, Cl. 251-54.000.

Hake, Kenneth, to Kent Manufacturing Co., Inc. Telescoping hinge member on rearwardly folding tool bar. 4,318,444, Cl. 172-456.000.

Halkola, Juhani: *See—*
Varis, Pauli; and Halkola, Juhani, 4,318,463, Cl. 192-85.0AB.

Hall, John B.: *See—*
Sprecker, Mark A.; and Hall, John B., 4,318,863, Cl. 260-463.000.

Hall, Stephen R.; and Lindmark, Craig L., to Rock Mill, Inc. Cutting machine with guard for cutting blade. 4,318,324, Cl. 83-397.000.

Hall, Wilbur S., to Amchem Products, Inc. Reducing the cracking of autodeposited coatings. 4,318,944, Cl. 427-377.000.

Halliburton Company: *See—*
Dennis, John R., 4,319,345, Cl. 367-25.000.
MacDonald, Clyde O., 4,319,346, Cl. 367-32.000.

Halluin, Albert P.; and Barnett, Allan E., to Exxon Research & Engineering Co. Non-ferrous group VIII aluminum coprecipitated hydrogenation catalysts. 4,318,829, Cl. 252-466.00J.

Ham, Fredric M.: *See—*
Girgis, Adly A.; and Ham, Fredric M., 4,319,329, Cl. 364-484.000.

Hamazaki, Yasuhiko; Ishiyama, Nobuo; Yamamoto, Toshiyuki; Seri, Kenji; and Sato, Reiko, to Kaken Chemical Co., Ltd. Benzaminoethylphenoxycyclohexylacetic acid derivatives. 4,318,923, Cl. 424-309.000.

Hamilton, Joel A. Retainer and propulsion apparatus carried in a self-contained handle for use with a removable cartridge. 4,318,499, Cl. 222-327.000.

Hamm, Willard C.: *See—*
Franczyk, John A.; Hamm, Willard C.; and White, Russell T., Jr., 4,319,255, Cl. 346-163.000.

Hamman, Lyle J., to Eaton Stamping Company. Electric motor drive unit. 4,318,573, Cl. 308-72.000.

Hammann, Ingeborg: *See—*
Fuchs, Rainer; Naumann, Klaus; Riebel, Hans-Jochem; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, 4,318,922, Cl. 424-304.000.

Hammerschmitt, Peter: *See—*
Manzke, Klaus; Hammerschmitt, Peter; Schneider, Richard; and Uhl, Karl, 4,319,354, Cl. 360-106.000.

Hammerstrom, Knut: *See—*
Lehmann, Wolfgang; Muller, Friedhelm; Cramn, Gunther; Hammerstrom, Knut; and Lobach, Wilfried, 4,319,019, Cl. 528-324.000.

Hanada, Hiroshi, to Canon Kabushiki Kaisha. Beam shaping optical system. 4,318,594, Cl. 350-433.000.

Hank, Sam T.: *See—*
Van Cleave, Stephen W.; Hank, Sam T.; and Deming, Andrew F., 4,319,102, Cl. 200-46.000.

Hanley, William W. Wide scan rearview mirror. 4,318,590, Cl. 350-289.000.

Hann, Richard A.: *See—*
Gillett, John E.; Isherwood, John; Hann, Richard A.; Norton-Berry, Philip; and Steel, Margaret L., 4,318,941, Cl. 427-212.000.

Hanpachern, Aran, to Muntz Electronics, Inc. System for detecting fades in television signals to delete commercials from recorded television broadcasts. 4,319,286, Cl. 360-33.000.

Hansen, Bent B., to Nordisk Ventilator Co. A/S. Particle erosion resistant covering for fan blade leading edge. 4,318,672, Cl. 416-224.000.

Hansen, W. Peter: *See—*
Lombardo, Igino; and Hansen, W. Peter, 4,318,480, Cl. 209-3.100.

Hara, Isao: *See—*
Miyata, Katsuharu; Hasegawa, Seiji; Aoki, Shinobu; and Hara, Isao, 4,319,018, Cl. 528-232.000.

Hara, Toshiwo, to Alps Electric Co., Ltd. Fine tuning coil having steel wire forming coil portion. 4,319,209, Cl. 334-74.000.

Harada, Tatsuo: *See—*
Kajioka, Mitsuru; Kurono, Hitoshi; Okawa, Katsumasa; and Harada, Tatsuo, 4,318,731, Cl. 71-92.000.

Harada, Yoshio: *See—*
Sato, Koji; Koyatsu, Osamu; Okitsu, Takumi; Harada, Yoshio; and Yamamura, Yuji, 4,318,276, Cl. 62-126.000.

Hardenbrook, James M., to Xerox Corporation. Method for inducing an electrostatic image in a conductive member. 4,318,972, Cl. 430-31.000.

Harel, Zvi: *See—*
Litman, David J.; Harel, Zvi; and Ullman, Edwin F., 4,318,707, Cl. 23-230.00B.

Harman, Neil W.: *See*—
Guibord, Ronald D.; Harman, Neil W.; and Hennessy, Richard E., 4,319,132, Cl. 235-379.000.

Harmon, Raymond E.: *See*—
Bourne, William R.; Harmon, Raymond E.; and Henrichs, Bernard W., 4,318,557, Cl. 292-113.000.

Harnagel, Gary L.; Laga, Gerry T.; Harrison, Joseph M.; and Twaddell, Victor A., to General Dynamics, Pomona Division. Schottky barrier photovoltaic detector. 4,319,258, Cl. 357-15.000.

Harnischfeger Corporation: *See*—
Rathi, Ram N., 4,318,488, Cl. 212-270.000.

Harrington, Pete F., to Coal Industry (Patents) Limited. Fluid flow monitors. 4,318,303, Cl. 73-861.230.

Harris Corporation: *See*—
Beasom, James D., 4,319,257, Cl. 357-13.000.

Harris, Glyn L; and Coxon, Frederick, to Albright & Wilson Limited. Polymeric compositions. 4,318,821, Cl. 252-188.30R.

Harrison, Joseph M.: *See*—
Harnagel, Gary L.; Laga, Gerry T.; Harrison, Joseph M.; and Twaddell, Victor A., 4,319,258, Cl. 357-15.000.

Harry W. Miller, Jr. Corp.: *See*—
Miller, Harry W., Jr., 4,318,933, Cl. 426-431.000.

Hartman, G. William, Jr.; and Schley, Ronald F., to Exxon Research & Engineering Co. Facsimile method and apparatus with sheet feeding. 4,319,282, Cl. 358-286.000.

Hartman, John F.: *See*—
Adamski, Henry S.; and Hartman, John F., 4,318,555, Cl. 283-7.000.

Hartranft, Marc D.; and Hendrickson, Thomas E., to Honeywell Inc. Alternating polarity power supply control apparatus. 4,319,182, Cl. 323-319.000.

Hartwell Corporation: *See*—
Bourne, William R.; Harmon, Raymond E.; and Henrichs, Bernard W., 4,318,557, Cl. 292-113.000.

Hasegawa, Gary K., to Continental Group, Inc., The. 12-Pack carry back carton. 4,318,474, Cl. 206-428.000.

Hasegawa, Seiji: *See*—
Miyata, Katsuharu; Hasegawa, Seiji; Aoki, Shinobu; and Hara, Isao, 4,319,018, Cl. 528-232.000.

Haselden, Geoffrey G. Distillation plate. 4,318,870, Cl. 261-114.0JP.

Hashimoto, Hiroshi: *See*—
Sagusa, Hisayuki; Hashimoto, Hiroshi; Nomura, Yasushi; Satou, Takehide; and Yabe, Ryohei, 4,318,615, Cl. 356-320.000.

Haskins, Steve W., to Northern Telecom, Inc. Enclosed modular switch. 4,319,107, Cl. 200-303.000.

Hasquenoph, Jean H.; and Coutin, Pierre F., to R. Alkan & Cie. Central-controlled devices for carrying and wedging loads under aircraft. 4,318,561, Cl. 294-83.00R.

Hauer, Jean-Claude: *See*—
Oger, Jacques F.; and Hauer, Jean-Claude, 4,318,637, Cl. 405-153.000.

Hausenblas, Helmut, to Rheinstahl Aktiengesellschaft. Method and apparatus for the precise alignment of a weapon. 4,318,330, Cl. 89-41.0TV.

Hauser, Jean-Michel: *See*—
Bibring, Herve; Khan, Tasaddaq; Rabinovitch, Maurice; Stohr, Jean-Francois; and Hauser, Jean-Michel, 4,318,756, Cl. 148-32.500.

Hayashi, Torahiko; Morikawa, Michio; and Shibata, Sadao, to Rheon Automatic Machinery Co., Ltd. Apparatus for producing a plurality of trapezoidal dough pieces of the same orientation from a web of dough sheet. 4,318,678, Cl. 425-301.000.

Hayward Baker Company: *See*—
Clarke, William J., 4,318,835, Cl. 264-36.000.

Hazemeijer B.V.: *See*—
van der Scheer, Derk; and Bosch, Hendrik A., 4,319,210, Cl. 335-16.000.

Headrick, Michael R.: *See*—
Brannan, Robert C.; Fogoros, Robert J.; Headrick, Michael R.; Krumins, Ainis; and Pryor, Robert F., 4,318,612, Cl. 355-14.0FU.

Heath-Coleman, Roy A. Structure for use with a pneumatic tire providing support in the event of deflation. 4,318,435, Cl. 152-158.000.

Heattreatment Advising Company N.V.: *See*—
Verheyden, Gerardus M. C., 4,318,259, Cl. 52-404.000.

Heberlein, Joachim V. R.: *See*—
Kimblin, Clive W.; Holmes, Francis A.; Heberlein, Joachim V. R.; Gorman, Joseph G.; and Slade, Paul G., 4,319,296, Cl. 361-4.000.

Hechtman, Herbert B.: *See*—
Justice, Richard E.; Grindlinger, Gene A.; and Hechtman, Herbert B., 4,318,301, Cl. 73-432.00R.

Heck, Friedrich. Thermal insulation for buildings. 4,318,258, Cl. 52-309.120.

Heckelsberg, Louis F.; Nelson, William T.; Schiff, Sidney; and Zuech, Ernest A., to Phillips Petroleum Company. Olefin dimerization. 4,319,064, Cl. 585-10.000.

Hederich, Manfred: *See*—
Ullrich, Martin; Hederich, Manfred; and Jerchel, Karl-Friedrich, 4,318,773, Cl. 159-47.00R.

Hedrich, Loren W.; Patel, Natu R.; and Kirkpatrick, Joel L., to Gulf Oil Corporation. Heterocyclic-substituted hydrazides and hydrazones as plant growth regulators. 4,319,026, Cl. 542-419.000.

Hedrick, Geoffrey S. M., to Smiths Industries Limited. Mach airspeed indicator. 4,319,333, Cl. 364-565.000.

Heilen, Gerd: *See*—
Rebafka, Walter; Heilen, Gerd; and Fliege, Werner, 4,319,055, Cl. 568-856.000.

Heimann GmbH: *See*—
Steinhage, Peter-Wilhelm, 4,319,135, Cl. 250-332.000.

Heitman, Herwarth; van der Drift, Johannes K.; Leenderts, Everardus J. A. M.; and Grootveld, Herman H., to Gist-Brocades N.V. Sodium amoxicillin solvate. 4,318,852, Cl. 260-239.100.

Heller, Harold: *See*—
Struver, Werner; Heller, Harold; and Lange, Peter M., 4,319,015, Cl. 526-329.100.

Helm, Charles W.: *See*—
Stone, Frederick A.; Helm, Charles W.; and Spinnler, Ralph F., 4,319,240, Cl. 340-856.000.

Helm, J. Thomas, to Dozier Equipment International Company. Drum handling device for forklift. 4,318,661, Cl. 414-607.000.

Hems, Roger: *See*—
Rowsell, David G.; Spring, David J.; and Hems, Roger, 4,318,900, Cl. 424-54.000.

Henderson, Alva E.: *See*—
Wiggins, Richard H.; and Henderson, Alva E., 4,319,083, Cl. 179-1.0SA.

Hendrickson, Thomas E.: *See*—
Hartranft, Marc D.; and Hendrickson, Thomas E., 4,319,182, Cl. 323-319.000.

Henkel Corporation: *See*—
Rogier, Edgar R., 4,319,049, Cl. 568-445.000.

Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See*—
Hill, Frank, 4,318,991, Cl. 435-245.000.

Hennessy, Richard E.: *See*—
Guibord, Ronald D.; Harman, Neil W.; and Hennessy, Richard E., 4,319,132, Cl. 235-379.000.

Henrichs, Bernard W.: *See*—
Bourne, William R.; Harmon, Raymond E.; and Henrichs, Bernard W., 4,318,557, Cl. 292-113.000.

Henry, James W., to Eastman Kodak Company. Electronic positioning method and apparatus. 4,319,272, Cl. 358-107.000.

Hensel, Jorg; Koberstein, Edgar; Bozon, Alfred; and Volker, Martin H., to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Apparatus for the catalytic purification of exhaust gases. 4,318,894, Cl. 423-212.000.

Henville, Michael I., to Mars, Incorporated. Hinge mechanism for a coin testing mechanism. 4,318,464, Cl. 194-97.00R.

Herchenbach, Paul; and Struck, Manfred, to Jean Walterscheid GmbH. Locking device for a shaft coupling mechanism. 4,318,630, Cl. 403-322.000.

Hermann, Karl H., to Bayer Aktiengesellschaft. Process for the preparation of basic dyestuffs. 4,318,859, Cl. 260-388.000.

Herron, David K.; and Lunn, William H. W., to Eli Lilly and Company. 7-(2-(Substituted benzoyl)amino)acetamido)cephalosporins. 4,319,028, Cl. 544-26.000.

Herscher, Marvin B.: *See*—
Welch, John R.; and Herscher, Marvin B., 4,319,085, Cl. 179-1.0SD.

Hess, Paul D., to Allis-Chalmers Corporation. Helical duct gas/meal separator. 4,318,692, Cl. 432-58.000.

Heuber, Klaus; and Wiedmann, Siegfried K., to International Business Machines Corp. Method and circuit arrangement for discharging bit line capacitances of an integrated semiconductor memory. 4,319,344, Cl. 365-203.000.

Heuser, Jurgen; Jeromin, Gunther; Schwarz, Hans-Helmut; and Friedhofen, Gerhard, to Bayer Aktiengesellschaft. Process for the preparation of 4,4'-dihydroxy-3,3',5,5'-tetraalkyl-diphenylalkanes. 4,319,053, Cl. 568-727.000.

Heyer, Arthur J.; Springer, Edward M.; and Clay, Wallace C., to Heyer Inc. Electronic stencil cutter. 4,319,253, Cl. 346-139.00C.

Heyer Inc.: *See*—
Heyer, Arthur J.; Springer, Edward M.; and Clay, Wallace C., 4,319,253, Cl. 346-139.00C.

Heymanns Lothar; and Dorp, Heinz V., to Wilhelm Hegenscheidt Gesellschaft mbH. Method for power clamping work pieces. 4,318,293, Cl. 72-362.000.

Heyn, William M., to Continental Group, Inc., The. Easy opening container with vent means. 4,318,494, Cl. 220-271.000.

Hi-Stat Manufacturing Company, Inc.: *See*—
Kochanski, Aloysius J.; Mowery, Frank D.; and Hire, Charles J., 4,318,673, Cl. 417-15.000.

Hicks, David: *See*—
Hicks, David W., 4,318,237, Cl. 40-502.000.

Hicks, David W., to Hicks, David. Light display unit. 4,318,237, Cl. 40-502.000.

Higashiyama, Hirokichi: *See*—
Yoshiwara, Seishiro; and Higashiyama, Hirokichi, 4,318,294, Cl. 72-370.000.

Higashiyama, Kazuhiro; and Hosaka, Akio, to Nissan Motor Company Limited. Load dependent fuel injection control system. 4,319,327, Cl. 364-431.050.

Higgins, Irving J.; and Hill, Hugh A. O., to National Research Development Corporation. Enzymatic processes. 4,318,784, Cl. 204-73.00R.

Hijikata, Isamu; Uehara, Akira; and Nakane, Hisashi, to Tokyo Ohka Kogyo Kabushiki Kaisha. Apparatus for the treatment of semiconductor wafers by plasma reaction. 4,318,767, Cl. 156-345.000.

Hill, Frank, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Baker's yeast with improved leavening power in acid dough. 4,318,991, Cl. 435-245.000.

Hill, Hugh A. O.: *See*—
Higgins, Irving J.; and Hill, Hugh A. O., 4,318,784, Cl. 204-73.00R.

Hill, John H., to Sentrol Systems Ltd. Delay line microwave moisture measuring apparatus. 4,319,185, Cl. 324-58.50A.

Hill, William F., to Lucas Industries, Limited. Circuits for electromagnet energization control. 4,319,301, Cl. 361-152.000.
Hillesland, Gene G. Convertible decoys assembled from and collapsible to flat sheets. 4,318,240, Cl. 43-3.000.
Hirai, Kentaro; Matsutani, Shigeru; Ishiba, Teruyuki; Makino, Itsuo; Doteuchi, Masami; and Otani, Koichi, to Shionogi & Co., Ltd. Thioethylamide derivatives. 4,318,858, Cl. 260-347.200.
Hirakawa, Hiromasa: *See*—
Sujumura, Takeshi; Saito, Shozo; Saito, Takashi; and Hirakawa, Hiromasa, 4,318,777, Cl. 376-253.000.
Hirata, Noritsugu: *See*—
Tsuji, Sadahiko; Hirata, Noritsugu; and Tanaka, Kazuo, 4,318,593, Cl. 350-430.000.
Hirata, Shoji: *See*—
Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,318,916, Cl. 424-274.000.
Hire, Charles J.: *See*—
Kochanski, Aloysius J.; Mowery, Frank D.; and Hire, Charles J., 4,318,673, Cl. 417-15.000.
Hiroshi, Matsushita; and Matsue, Shinozaki, to Japan Tobacco & Salt Public Corporation, The. Flavorant composition for tobacco, method for producing the same tobacco product comprising said composition. 4,318,417, Cl. 131-274.000.
Hiroshima, Tatsuo; Sakamoto, Takahide; Matsui, Kenichi; and Ohgaki, Ichiroh, to Sumitomo Metal Industries, Ltd. Hot steel cutting apparatus. 4,318,439, Cl. 164-154.000.
Hirota, Yukitsugu; Kaneko, Yoichi; Sekine, Kenji; Endo, Akira; and Kimura, Katsuhiro, to Nissan Motor Co., Ltd.; and Hitachi, Ltd. Short-range doppler radar. 4,319,244, Cl. 343-8.000.
Hirsch, Arthur, to Arvey Corporation. Three-fold closable pouch. 4,318,506, Cl. 229-62.000.
Hirsch, Martin: *See*—
Albrecht, Johannes-Josef; Rammler, Roland; and Hirsch, Martin, 4,318,798, Cl. 208-11.00R.
Hirst Contact Lens Limited: *See*—
Van der Kolk, Herbert C.; and Davy, Martyn W., 4,318,595, Cl. 351-160.00H.
Hirtle, Michael O.: *See*—
Stowell, Roger H.; Hirtle, Michael O.; Brown, Russell W.; and Moore, Arthur D., 4,318,245, Cl. 46-232.000.
Hitachi, Ltd.: *See*—
Fukui, Hiroshi; and Amano, Hisao, 4,319,317, Cl. 363-124.000.
Hirota, Yukitsugu; Kaneko, Yoichi; Sekine, Kenji; Endo, Akira; and Kimura, Katsuhiro, 4,319,244, Cl. 343-8.000.
Nakamura, Hideo; Takagi, Katsuaki; and Funabashi, Tsuneo, 4,319,226, Cl. 340-347.0NT.
Nishizawa, Masahiro; Miura, Kiyoshi; Yokomizo, Hiroshi; Sasaya, Osamu; Morishita, Hajime; and Uchino, Shoichi, 4,318,971, Cl. 430-28.000.
Sato, Yoshio; Kurihara, Nobuo; Nomura, Masahide; Kawano, Shigeyoshi; and Saito, Tadayoshi, 4,319,320, Cl. 364-165.000.
Sujumura, Takeshi; Saito, Shozo; Saito, Takashi; and Hirakawa, Hiromasa, 4,318,777, Cl. 376-253.000.
Tarutani, Yoshinobu; Yamada, Hirozi; and Kawabe, Ushio, 4,319,256, Cl. 357-5.000.
Yamazaki, Takeo; and Miyoshi, Tadahiko, 4,319,215, Cl. 338-21.000.
Hitachi Metals, Ltd.: *See*—
Fukui, Hiroshi; and Amano, Hisao, 4,319,317, Cl. 363-124.000.
Hitchcock, James R., Jr.: *See*—
Edelman, William; Hitchcock, James R., Jr.; and Schnell, William J., 4,318,813, Cl. 210-321.400.
Ho, Paul S.: *See*—
Gangulee, Amitava; Ho, Paul S.; Howard, James K.; and Miller, Robert J., 4,319,264, Cl. 357-71.000.
Hobart Corporation: *See*—
Voorhees, John E.; and Mathieu, Raymond J., 4,318,323, Cl. 83-168.000.
Hochiki Corporation:: *See*—
Maruyama, Masaki; and Nakamura, Kohei, 4,319,231, Cl. 340-587.000.
Hodgson, Edward R., to Fordath Limited. Article comprising carbon fibres and method of producing the article. 4,318,948, Cl. 428-68.000.
Hodgson, Victor F.: *See*—
Dockray, Edward; and Hodgson, Victor F., 4,318,761, Cl. 264-46.200.
Hoechst Aktiengesellschaft: *See*—
Braun, Albert; Portz, Willi; and Strauss, Georg, 4,318,822, Cl. 252-189.000.
Kubbeler, Hans-Klaus; Erpenbach, Heinz; Gehrmann, Klaus; and Kohl, George, 4,319,038, Cl. 560-232.000.
Molter, Michael; Kloss, Gerhard; and Schickel, Eberhard, 4,318,898, Cl. 424-1.000.
Ohorodnik, Alexander; Neumaier, Hubert; and Gehrmann, Klaus, 4,318,865, Cl. 260-543.00P.
Rewitzer, Siegfried, 4,318,264, Cl. 53-436.000.
Wiezer, Hartmut; Pfahler, Gerhard; Haberlein, Harald; and Nowy, Gunther, 4,319,030, Cl. 546-19.000.
Hoeh, Frederick W., deceased (by Hoeh, Inga, executrix), to Westinghouse Electric Corp. Fluorescent lamp having a convoluted tubular envelope of compact tridimensional configuration. 4,319,162, Cl. 313-487.000.
Hoeh, Inga, executrix: *See*—
Hoeh, Frederick W., deceased, 4,319,162, Cl. 313-487.000.
Hoff, Marcian E., Jr.; Townsend, Marshall A.; and Dreyer, Stephen F., to Intel Corporation. Digital processor for processing analog signals. 4,319,325, Cl. 364-200.000.
Hofferber, Eva: *See*—
Cohnen, Erich; Armah, Ben; and Hofferber, Eva, 4,318,915, Cl. 424-273.00R.
Hoffman, Erwin: *See*—
Falk, Heinz; Hoffman, Erwin; and Ludke, Christian, 4,318,614, Cl. 356-311.000.
Hoffmann-La Roche Inc.: *See*—
Bollag, Werner; Ruegg, Rudolf; and Ryser, Gottlieb, 4,319,048, Cl. 568-442.000.
Trybulski, Eugene J., 4,318,854, Cl. 260-326.00A.
Hogberg, Anders T. V., to AB Volvo. Method of investigation or control of catalysts or catalyst reactions. 4,318,708, Cl. 23-230.00R.
Hogervorst, Johannes R., to Shell Oil Company. Method for securing a tubular element to the bottom of a body of water and apparatus for carrying out this method. 4,318,641, Cl. 405-224.000.
Hoggatt, Donald L. Exhaust filter muffler. 4,318,720, Cl. 55-276.000.
Hohl, G. Burnell: *See*—
Sander, Willy M.; Boudreau, David L.; and Hohl, G. Burnell, 4,319,337, Cl. 364-900.000.
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Varis, Pauli; and Halkola, Juhani, 4,318,463, Cl. 192-85.0AB.
Holman, Donald M. Conversion device for cannister vacuum cleaners. 4,318,202, Cl. 15-328.000.
Holmes, Arthur S.; and Ryan, James M., to Koch Process Systems, Inc. Cryogenic distillative separation of acid gases from methane. 4,318,723, Cl. 62-20.000.
Holmes, Francis A.: *See*—
Kimblin, Clive W.; Holmes, Francis A.; Heberlein, Joachim V. R.; Gorman, Joseph G.; and Slade, Paul G., 4,319,296, Cl. 361-4.000.
Holmgren, Raymond S. Fecal flotation apparatus. 4,318,803, Cl. 209-17.000.
Holt, Harley R., to Bunker Ramo Corporation. Conductor terminating apparatus. 4,318,215, Cl. 29-566.300.
Holz, Dietrich: *See*—
Dorsch, Erich G.; and Holz, Dietrich, 4,318,457, Cl. 188-1.110.
Holzle, Gerd: *See*—
Polony, Rudolf; Reinert, Gerhard; Holzle, Gerd; Pugin, Andre; and Vonderwahl, Rodolphe, 4,318,883, Cl. 422-22.000.
Homma, Itomi: *See*—
Ishida, Atsuo; Homma, Itomi; and Inoue, Shigeo, 4,318,901, Cl. 424-70.000.
Honda, Chika: *See*—
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Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ban, Keisuke; and Arai, Takeo, 4,318,438, Cl. 164-97.000.
Honeywell Inc.: *See*—
Hartranft, Marc D.; and Hendrickson, Thomas E., 4,319,182, Cl. 323-319.000.
Powell, Robert W., 4,319,343, Cl. 365-189.000.
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Guibord, Ronald D.; Harman, Neil W.; and Hennessy, Richard E., 4,319,132, Cl. 235-379.000.
Johnson, Robert B.; Nibby, Chester M., Jr.; and Moore, Dana W., 4,319,324, Cl. 364-200.000.
Hooker Chemicals & Plastics Corp.: *See*—
Kosanovich, George M.; and Salee, Gideon, 4,319,017, Cl. 528-176.000.
Witschard, Gilbert, 4,319,002, Cl. 525-71.000.
Hoover, William F., Jr.: *See*—
Evans, Gary E.; and Hoover, William F., Jr., 4,319,249, Cl. 343-703.000.
Horimoto, Rioichi; and Seike, Riyuuzou, to TDK Electronics Co., Ltd. Process for producing ferro-magnetic metal particles. 4,318,757, Cl. 148-105.000.
Hornby, William E.; and Morris, David L., to Miles Laboratories, Inc. FMN-Labeled specific binding assay. 4,318,982, Cl. 435-7.000.
Hornby, William E.; and Morris, David L., to Miles Laboratories, Inc. Fad-labeled specific binding assay monitored with apoglutathione reductase or apolipoamide dehydrogenase. 4,318,983, Cl. 435-7.000.
Horng, Cheng T., to International Business Machines Corporation. Self-aligned process for providing an improved high performance bipolar transistor. 4,318,751, Cl. 148-1.500.
Hornig, Hans W., to Blendax-Werke R. Schneider GmbH & Co. Manufacturing method for soap bars. 4,318,878, Cl. 264-148.000.
Hornle, Reinhold: *See*—
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Horowitz, Samuel J., to Du Pont de Nemours, E. I., and Company. Thick film conductors having improved aged adhesion. 4,318,830, Cl. 252-519.000.
Hosaka, Akio: *See*—
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Hoskinson, James. Crimping tool for automobile door panels. 4,318,211, Cl. 29-243.500.

Houminer, Yoram: *See*—
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Howe, Milton A., Jr.: *See*—
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Howell, Stephen L., to Kimball International, Inc. Plural manual organ having transposer. 4,318,326, Cl. 84-1.010.
Howey, Thomas L. Workbench tool assembly. 4,318,432, Cl. 144-1.00C.
Hoyle, Albert G.: *See*—
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Hozumi, Toshiaki: *See*—
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Hsu, Chao-Yang; and Kesling, Haven S., Jr., to Atlantic Richfield Company. Preparation of unsaturated monester precursor for pelargonic acid. 4,318,860, Cl. 260-405.500.
Hsu, Sheng T., to RCA Corporation. Extended drain self-aligned silicon gate MOSFET. 4,318,216, Cl. 29-571.000.
Huber, Ulrich; and Wild, Hans-Jakob, to Givaudan Corporation. Process for the preparation of alpha-hydroxycarbonyl compounds. 4,318,855, Cl. 260-343.600.
Huckler, Volker D.: *See*—
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Hudson, Robert: *See*—
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Huebner, Juergen, to Mobil Oil Corporation. Phosphate ester fluids containing piperazines. 4,318,817, Cl. 252-78.500.
Huelle, Zbigniew R.; and Nielsen, Leif, to Danfoss A/S. Actuating apparatus for adjusting a movable element, particularly the closure member of a valve. 4,318,529, Cl. 251-11.000.
Hughes Aircraft Company: *See*—
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Hurkmans, Antoon M.; Arnoldi, Douglas R.; and Sloan, Richard A., Jr., to Burroughs Corporation. Constant head, magnetic actuated ink jet cartridge for use in an electrostatic ink jet printer. 4,319,254, Cl. 346-140.00R.
Hurley, Donald L., to Western States Machine Company, The. Continuous centrifugal machine. 4,318,814, Cl. 210-365.000.
Hurley, Rupert B., to Badische Corporation. Process for production of a tartronic acid solution. 4,319,045, Cl. 562-582.000.
Hurni, William M.; and McAleer, William J., to Merck & Co. Inc. Automated plate reader. 4,319,271, Cl. 358-107.000.
Husler: *See*—
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Husted, Royce H. Molded racket. 4,318,545, Cl. 273-73.00R.
Hutton, Robert P. Artist's lap easel. 4,318,471, Cl. 206-214.000.
Hyatt, Gilbert P.: *See*—
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Ichikawa, Masanori: *See*—
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Utsumi, Masatoki; Ohi, Nobuo; Kishiue, Yasuhiro; and Nose, Kazumi, 4,318,718, Cl. 55-121.000.
Ide, Susumu: *See*—
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Ide, Tosiaki; Watanabe, Akio; and Uehori, Tatsuo, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,318,961, Cl. 428-425.900.
Iida, Tomimaru. Desalinazation apparatus. 4,318,781, Cl. 202-173.000.
Iinuma, Kazuhiro; and Takamizawa, Kinya, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic diagnostic apparatus. 4,318,413, Cl. 128-660.000.
Ikeda, Junichi: *See*—
Uemura, Tamio; Ito, Yoshimasa; and Ikeda, Junichi, 4,318,360, Cl. 112-318.000.
Ikeda, Tadao: *See*—
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Ikeda, Toshio; Tsukada, Ziro; and Mera, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Discharge resistor. 4,319,216, Cl. 338-61.000.
Illinois Tool Works Inc.: *See*—
Borja, Jesus; Bakker, John A.; and French, Edward C., 4,318,208, Cl. 24-305.000.
Imai, Kiyonori, to Kayabakogyokabushikikaisha. Rear wheel suspension for motorcycles. 4,318,535, Cl. 267-8.00R.
Imai, Teturo; and Kobari, Mitsuru, to Kabushiki Kaisha Meidensha. Current supply cable for a high frequency heating device. 4,319,070, Cl. 174-15.0WF.
Imao, Eiichi: *See*—
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Imasato, Yasunobu: *See*—
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Austin, Peter W.; and Fishwick, Brian R., 4,318,851, Cl. 260-158.000.
Dockray, Edward; and Hodgson, Victor F., 4,318,761, Cl. 264-46.200.
Fawcett, Richard, 4,318,966, Cl. 428-683.000.
Gillett, John E.; Isherwood, John; Hann, Richard A.; Norton-Berry, Philip; and Steel, Margaret L., 4,318,941, Cl. 427-212.000.
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Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,318,687, Cl. 431-54.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Gas burner control system. 4,318,687, Cl. 431-54.000.
Inoue, Shigeo: *See*—
Ishida, Atsuo; Homma, Itomi; and Inoue, Shigeo, 4,318,901, Cl. 424-70.000.
Institute of Gas Technology: *See*—
Ghosh, Sambhunath; and Klass, Donald L., 4,318,993, Cl. 435-299.000.
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Mila-de-la-Roca, Yolanda M.; Azuaje, Beltran V.; and Gil, Omar R., 4,318,992, Cl. 435-291.000.
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Intel Corporation: *See*—
Hoff, Marcian E., Jr.; Townsend, Marshall A.; and Dreyer, Stephen F., 4,319,325, Cl. 364-200.000.
Intengan, Franklin S. Simulated knotted necktie. 4,318,189, Cl. 2-144.000.
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International Business Machines Corporation: *See*—
Alvarez, Joseph A., III; Brennen, John F.; and Krug, Robert W., 4,319,353, Cl. 370-104.000.
Anderson, Robert W.; Gee, May L.; and McMullen, Alice K., 4,319,336, Cl. 364-900.000.
Bossen, Douglas C., 4,319,357, Cl. 371-38.000.
Brannan, Robert C.; Fogoros, Robert J.; Headrick, Michael R.; Krumins, Ainis; and Pryor, Robert F., 4,318,612, Cl. 355-14.0FU.
Cook, Paul A.; Mayo, Randall D.; and Raider, Jerry W., 4,319,174, Cl. 318-696.000.
Cullum, Clifton D., Jr.; Thompson, David A.; and Worthington, Thomas K., 4,319,189, Cl. 324-208.000.
Franczyk, John A.; Hamm, Willard C.; and White, Russell T., Jr., 4,319,255, Cl. 346-163.000.
Gangulee, Amitava; Ho, Paul S.; Howard, James K.; and Miller, Robert J., 4,319,264, Cl. 357-71.000.
Heuber, Klaus; and Wiedmann, Siegfried K., 4,319,344, Cl. 365-203.000.
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Lamos, Richard A., 4,318,539, Cl. 270-58.000.
Malaviya, Shashi D., 4,319,148, Cl. 307-471.000.
Scheuerlein, Roy E., 4,319,342, Cl. 365-149.000.
Survant, Thomas G., 4,318,625, Cl. 400-322.000.
International Computers Limited: *See*—
Tudberry, Ronald O., 4,318,579, Cl. 339-74.00R.
International Flavors & Fragrances Inc.: *See*—
Boden, Richard M., 4,318,934, Cl. 426-534.000.
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Schmitt, Frederick L.; and Granda, Edward J., 4,319,036, Cl. 560-120.000.
Sprecker, Mark A.; and Hall, John B., 4,318,863, Cl. 260-463.000.

International Harvester Company: *See*—
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International Telephone and Telegraph Corporation: *See*—
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Schiffmann, Robert F.; Mirman, Alfred H.; and Grillo, Richard J., 4,318,931, Cl. 426-243.000.
International Tools (1973) Limited: *See*—
Morgan, Dennis W., 4,318,686, Cl. 425-543.000.
International W Systems S.r.l.: *See*—
Mancini, Paolo E., 4,318,628, Cl. 403-231.000.
Inui, Taiji: *See*—
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; and Inui, Taiji, 4,318,847, Cl. 260-112.50R.
Ioshizumi, Kikuo: *See*—
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Iowa Manufacturing Company of Cedar Rapids, Iowa: *See*—
Schlarmann, Philip J., 4,318,619, Cl. 366-4.000.
Iowa State University Research Foundation, Inc.: *See*—
Girgis, Adly A.; and Ham, Fredric M., 4,319,329, Cl. 364-484.000.
IPCO Corporation: *See*—
Claffey, Kevin; and Osipow, Lloyd, 4,318,746, Cl. 106-194.000.
Ippoliti, Augusto; and Lisotti, Silvana. Helmet for providing a sensory effect to an observer. 4,319,308, Cl. 362-106.000.
Irani, Cyrus A.; Cozewith, Charles; and Kasegrande, Stephen S., to Exxon Research & Engineering Co. Method for high temperature phase separation of solutions containing ethylene copolymer elastomers. 4,319,021, Cl. 528-498.000.
Irie, Hiroyuki: *See*—
Matsuo, Tamotsu; Ide, Susumu; and Irie, Hiroyuki, 4,319,237, Cl. 340-713.000.
Iritani, Hidenori; and Tomizawa, Yasumichi, to Nissan Motor Company, Limited. Vapor fuel purge system for an automotive vehicle. 4,318,383, Cl. 123-520.000.
Isherwood, John: *See*—
Gillett, John E.; Isherwood, John; Hann, Richard A.; Norton-Berry, Philip; and Steel, Margaret L., 4,318,941, Cl. 427-212.000.
Ishiba, Teruyuki: *See*—
Hirai, Kentaro; Matsutani, Shigeru; Ishiba, Teruyuki; Makino, Itsuo; Doteuchi, Masami; and Otani, Koichi, 4,318,858, Cl. 260-347.200.
Ishibashi, Kazuhisa, to Toyo Seikan Kaisha, Ltd. High frequency induction heating apparatus having a vacuum oscillator means. 4,319,111, Cl. 219-10.690.
Ishibe, Nobuyuki, to Dow Chemical Company, The. Preparation of nitroalkanes. 4,319,059, Cl. 568-947.000.
Ishida, Atsuo; Homma, Itomi; and Inoue, Shigeo, to KAO Soap Co., Ltd. Hair cosmetic composition. 4,318,901, Cl. 424-70.000.
Ishida, Hiroshi: *See*—
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Ishijima, Shizuo; and Imasato, Yasunobu, to Asahi Kasei Kogyo Kabushiki Kaisha. Metal flake pigment and method of preparing the same. 4,318,747, Cl. 106-290.000.
Ishikura, Tomoyuki: *See*—
Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,318,916, Cl. 424-274.000.
Ishiyama, Nobuo: *See*—
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Ito, Susumu; Nagao, Morimasa; Toki, Kaoru; and Morita, Keizo, to Nippon Electric Co., Ltd. Magnetic rotary encoder for detection of incremental angular displacement. 4,319,188, Cl. 324-173.000.
Ito, Yoshimasa: *See*—
Uemura, Tamio; Ito, Yoshimasa; and Ikeda, Junichi, 4,318,360, Cl. 112-318.000.
Itoh, Shinobu. Impedance converting circuit. 4,319,143, Cl. 307-151.000.
Itou, Kazuhiko: *See*—
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ITT Industries Incorporated: *See*—
Bauer, Kurt; Dorr, Wilhelm; Kohler, Alfred; Krizek, Oldrich; and Prohaska, Hans, 4,318,200, Cl. 15-250.320.
Wiegand, Hans-Jurgen; and Geiss, Wolfgang, 4,318,335, Cl. 91-369.00A.
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LLauge, Joaquin R., 4,318,650, Cl. 411-38.000.
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Iwamoto, Kenichi. Presser foot. 4,318,358, Cl. 112-235.000.
Iwayama, Kenzo: *See*—
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J. C. Schumacher Company: *See*—
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Erickson, Allen O.; and Thomas, Howard W., 4,318,662, Cl. 414-686.000.
Schuck, Paul R., 4,318,445, Cl. 172-477.000.
Waite, Jerry A., 4,318,663, Cl. 414-707.000.
J. J. Barker Company Limited: *See*—
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Jacob Preh Nachf. GmbH & Co.: *See*—
Ambros, Peter; and Gatzke, Erich, 4,319,217, Cl. 338-308.000.
Jacobsen, LeRoy V., to Central Hydraulics Co. Hydropneumatic system. 4,318,550, Cl. 280-766.000.
Jacobsen, Robert; and Connor, Joseph E., to Continental Group, Inc., The. Easy opening container. 4,318,493, Cl. 220-270.000.
Jacobson, Howard C.; and Olson, George R., to Jacobson Machine Works, Inc. Quick action screen latching apparatus for hammermill. 4,318,512, Cl. 241-73.000.
Jacobson Machine Works, Inc.: *See*—
Jacobson, Howard C.; and Olson, George R., 4,318,512, Cl. 241-73.000.
Jacobsson, Kurt A. G.; and Johansson, Egon, to Aktiebolaget IRO. Apparatus for the positive delivery of thread to circular knitting machines. 4,318,285, Cl. 66-132.00T.
Jaeger Machine Company: *See*—
Lawrence, William A.; and O'Dea, John A., 4,318,621, Cl. 366-41.000.
Jager, Berend; Brink, Andries; and Kleynjan, Cornelis, to Sasol One (Proprietary) Limited. Process for converting coal into liquid products. 4,318,797, Cl. 208-8.0LE.
Jan Berglund Produktions AB: *See*—
Berglund, Jan-Olof V., 4,318,998, Cl. 521-54.000.
Jani, Ramesh N.: *See*—
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Janome Sewing Machine Co., Ltd.: *See*—
Takayama, Tsuneo; and Tonomura, Yoshinobu, 4,318,359, Cl. 112-158.00E.
Janousek, Rade, to Societe Alsacienne de Constructions Mecaniques de Mulhouse. Yarn-piecing and cleaning system for a spinning machine. 4,319,235, Cl. 340-677.000.
Janson, Richard W. Joist assembly for stage equipment support system. 4,318,252, Cl. 52-39.000.
Janssen, Jozef T. A., to U.S. Philips Corporation. Counterbalanced support. 4,318,538, Cl. 269-324.000.
Japan Tobacco & Salt Public Corporation, The: *See*—
Hiroshi, Matsushita; and Matsue, Shinozaki, 4,318,417, Cl. 131-274.000.
Jautelat, Manfred: *See*—
Buhmann, Hans-Rolf; Arlt, Dieter; and Jautelat, Manfred, 4,318,783, Cl. 204-59.00R.
Jean Walterscheid GmbH: *See*—
Herchenbach, Paul; and Struck, Manfred, 4,318,630, Cl. 403-322.000.
Jeffrey, Paul W.; and Blade, John C., to Alcan Research and Development Limited. Aluminum alloy can stock and method of making same. 4,318,755, Cl. 148-11.50A.
Jenaer, Glaswerk, Schott & Gen.: *See*—
Oberle, Ingrid; and Bahr, Jens, 4,318,548, Cl. 277-207.00A.
Jenkinson, Frederic W., to McHenry Systems, Inc. Angle measuring apparatus. 4,318,225, Cl. 33-1.0PT.
Jenner, Michael D.; and Blackman, Maurice V., to U.S. Philips Corporation. Method of manufacturing an infra-red detector device. 4,318,217, Cl. 29-572.000.
Jenoptik Jena GmbH: *See*—
Falk, Heinz; Hoffman, Erwin; and Ludke, Christian, 4,318,614, Cl. 356-311.000.
Jensen, Warren M., to Boeing Aerospace Company. Printed wiring board substrates for ceramic chip carriers. 4,318,954, Cl. 428-209.000.
Jerchel, Karl-Friedrich: *See*—
Ullrich, Martin; Hederich, Manfred; and Jerchel, Karl-Friedrich, 4,318,773, Cl. 159-47.00R.
Jeromin, Gunther: *See*—
Heuser, Jurgen; Jeromin, Gunther; Schwarz, Hans-Helmut; and Friedhofen, Gerhard, 4,319,053, Cl. 568-727.000.
Jett, Richard G. Slip clutch for a bin level indicator. 4,318,624, Cl. 366-349.000.
Jett, William B., Jr., to Motorola, Inc. Voltage regulator circuitry having low quiescent current drain and high line voltage withstanding capability. 4,319,179, Cl. 323-281.000.
Jinkins, J. Randolph. Computerized tomography radiograph data transfer cap. 4,319,136, Cl. 250-456.000.
Johansson, Egon: *See*—
Jacobsson, Kurt A. G.; and Johansson, Egon, 4,318,285, Cl. 66-132.00T.
Johansson, Rune L., to Thermal Dynamics Corporation. Monitoring and feedback controls for a spray welding apparatus. 4,319,124, Cl. 219-130.210.
John Heathcoat & Company Limited: *See*—
Foster, Peter W.; Berry, Thomas; and Murenbeeld, Karel, 4,318,210, Cl. 28-246.000.
John Wyeth & Brother Limited: *See*—
White, Alan C.; and Shepherd, Robin G., 4,318,909, Cl. 424-244.000.
Johnson, Axel R.: *See*—
Woebcke, Herman N.; Bhojwani, Arju H.; Gartside, Robert J.; and Johnson, Axel R., 4,318,800, Cl. 208-127.000.
Johnson, James R. Slit-sealing apparatus for high-density plastic sheets. 4,318,768, Cl. 156-494.000.
Johnson, Robert B.; Nibby, Chester M., Jr.; and Moore, Dana W., to Honeywell Information Systems Inc. Double word fetch system. 4,319,324, Cl. 364-200.000.
Johnson, Robert L. Fast acting vice. 4,318,454, Cl. 182-129.000.
Johnston & Margolis, P.C.: *See*—
Burton, Carl, 4,318,559, Cl. 292-263.000.

Jones, Gordon H.: *See—*
Nestor, John J.; Jones, Gordon H.; and Vickery, Brian H., 4,318,905, Cl. 424-177.000.
Jones, Raymond D.: *See—*
Napiorkowski, John; Jones, Raymond D.; Fukushima, Toshitaka; Koyama, Kazumi; Ueno, Kouji; Miyamura, Tamio; and Kawabata, Yuichi, 4,319,300, Cl. 361-119.000.
Joubert, Jean L.: *See—*
Allain, Jacques M.; Courtel, Daniel; Joubert, Jean L.; and Vidonne, Jean P., 4,319,322, Cl. 364-200.000.
Joung, Jong, to Kendall Company, The. Polymer coating and curing process for catheters. 4,318,947, Cl. 428-36.000.
Judd, Duncan B.: *See—*
Clitherow, John W.; Bradshaw, John; Mackinnon, John W. M.; Price, Barry J.; Martin-Smith, Michael; and Judd, Duncan B., 4,318,913, Cl. 424-267.000.
Judin, Valentin P.: *See—*
Kulakov, Valery V.; Judin, Valentin P.; Pavlova, Antonina I.; Zlatkis, Anatoly M.; Bagrov, Georgy N.; Zverev, Ivan I.; Khazanov, Iosif I.; Suvorov, Alexei V.; Bobrinsky, Alexei A.; and Pasynkov, Vladimir A., 4,318,955, Cl. 428-235.000.
Julich, Gregory G.: *See—*
Nauheimer, James F.; and Julich, Gregory G., 4,318,472, Cl. 206-284.000.
Jung, Henry W. Floating concrete dock. 4,318,362, Cl. 114-266.000.
Jungbluth, Evan D.; and Fuccio, Francesco. Means for securing a tree to ground stakes. 4,318,246, Cl. 47-42.000.
Jungheinrich Unternehmensverwaltung KG, Firma: *See—*
Griesenbrock, Karl-Heinz, 4,318,450, Cl. 180-212.000.
Justice, Richard E.; Grindlinger, Gene A.; and Hechtman, Herbert B., to President and Fellows of Harvard College. Apparatus for measuring papillary muscle contractility. 4,318,301, Cl. 73-432.00R.
Kabushiki Kaisha Meidensha: *See—*
Imai, Teturo; and Kobari, Mitsuru, 4,319,070, Cl. 174-15.0WF.
Kabushiki Kaisha Saginomiya Seisakusho: *See—*
Sato, Koji; Koyatsu, Osamu; Okitsu, Takumi; Harada, Yoshio; and Yamamura, Yuji, 4,318,276, Cl. 62-126.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
Fujimori, Hiroaki; and Nagao, Shoichi, 4,319,351, Cl. 368-187.000.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Kurobe, Moriji; Tsuji, Ryusuke; Imao, Eiichi; Masuyama, Takayuki; Nagata, Eizi; and Kamada, Kazunori, 4,319,016, Cl. 528-127.000.
Kai, Isao: *See—*
Nakai, Hideharu; Kai, Isao; and Yamamoto, Hirohito, 4,319,155, Cl. 310-316.000.
Kajioka, Mitsuru; Kurono, Hitoshi; Okawa, Katsumasa; and Harada, Tatsuo, to Nihon Nohyaku Co., Ltd. Δ^2-1,2,4-triazolin-5-one derivatives and herbicidal usage thereof. 4,318,731, Cl. 71-92.000.
Kajiura, Toshihiro; Oita, Norio; Mori, Masahiro; and Fukui, Yuichi, to Kanebo Limited. External appearance inspecting system. 4,319,269, Cl. 358-106.000.
Kaken Chemical Co., Ltd.: *See—*
Hamazaki, Yasuhiko; Ishiyama, Nobuo; Yamamoto, Toshiyuki; Seri, Kenji; and Sato, Reiko, 4,318,923, Cl. 424-309.000.
Kaku, Eizaburo: *See—*
Suenobu, Koreyoshi; Kaku, Eizaburo; and Miura, Takanori, 4,319,051, Cl. 568-720.000.
Kamada, Kazunori: *See—*
Kurobe, Moriji; Tsuji, Ryusuke; Imao, Eiichi; Masuyama, Takayuki; Nagata, Eizi; and Kamada, Kazunori, 4,319,016, Cl. 528-127.000.
Kamae, Takahiko: *See—*
Mitsuya, Eiji; Murakami, Shinichi; Mori, Katsumi; Kishimoto, Tomio; and Kamae, Takahiko, 4,319,267, Cl. 358-75.000.
Kanebo Limited: *See—*
Kajiura, Toshihiro; Oita, Norio; Mori, Masahiro; and Fukui, Yuichi, 4,319,269, Cl. 358-106.000.
Kaneko, Yoichi: *See—*
Hirota, Yukitsugu; Kaneko, Yoichi; Sekine, Kenji; Endo, Akira; and Kimura, Katsuhiro, 4,319,244, Cl. 343-8.000.
Kanetsu Kogyo Kabushiki Kaisha: *See—*
Nakajima, Takato, 4,318,804, Cl. 209-221.000.
Kao Soap Co., Ltd.: *See—*
Atsumi, Toshio; Takebayashi, Yoshiaki; Fukui, Masaru; and Yamamoto, Hisao, 4,318,925, Cl. 424-324.000.
Ishida, Atsuo; Homma, Itomi; and Inoue, Shigeo, 4,318,901, Cl. 424-70.000.
Karl Fischer Industrieanlagen GmbH: *See—*
Gerking, Luder; and Panke, Gunter, 4,318,676, Cl. 425-72.00S.
Karpov, Vladimir D.: *See—*
Kuznetsov, Vladimir N.; Smirnova, Nadezhda F.; and Karpov, Vladimir D., 4,318,975, Cl. 430-260.000.
Kasama, Katsumi; and Kasama, Toru. Implant artificial denture. 4,318,696, Cl. 433-173.000.
Kasama, Toru: *See—*
Kasama, Katsumi; and Kasama, Toru, 4,318,696, Cl. 433-173.000.
Kasegrande, Stephen S.: *See—*
Irani, Cyrus A.; Cozewith, Charles; and Kasegrande, Stephen S., 4,319,021, Cl. 528-498.000.
Kasuga, Muneo: *See—*
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,318,611, Cl. 355-14.0SH.
Katayose, Mitsuru: *See—*
Yamamoto, Fumihiko; Katayose, Mitsuru; Tanaka, Kyugo; and Misumi, Teruyuki, 4,318,850, Cl. 260-152.000.
Kato, Hisashi; and Toyoda, Sadao. Electrode for an electric dust collector. 4,318,719, Cl. 55-147.000.
Kato, Kunihiro: *See—*
Naganawa, Tatsuhiro; Yoshitoshi, Makoto; and Kato, Kunihiro, 4,319,094, Cl. 179-77.000.
Kato, Suehiro: *See—*
Nishiyama, Hiroshi; Kato, Suehiro; and Nakamura, Takeshi, 4,318,796, Cl. 204-298.000.
Kato, Toshikazu: *See—*
Motoyama, Kazuyasu; and Kato, Toshikazu, 4,319,295, Cl. 360-137.000.
Katoh, Hiroshi, to Victor Company of Japan, Ltd. Cassette loading and ejecting apparatus. 4,319,292, Cl. 360-96.500.
Katsenis, Peter G.: *See—*
Charles, Stanley E.; Long, Donald A.; Katsenis, Peter G.; and Mosher, Walter W., Jr., 4,318,234, Cl. 40-21.00C.
Katsube, Junki: *See—*
Ohashi, Naohito; Nagata, Shoji; Ioshizumi, Kikuo; and Katsube, Junki, 4,319,040, Cl. 562-401.000.
Kauppi, Markku; Nhinivaara, Juhani; Nurminen, Markku, deceased; and by Nurminen, Marjatta, administrator. Welding using soap shielding. 4,319,116, Cl. 219-72.000.
Kawabata, Toshio: *See—*
Matsumoto, Genya; Sakai, Munetaka; Nakata, Shigeki; and Kawabata, Toshio, 4,319,044, Cl. 562-559.000.
Kawabata, Yuichi: *See—*
Fukushima, Toshitaka; Koyama, Kazumi; Ueno, Kouji; Miyamura, Tamio; and Kawabata, Yuichi, 4,319,341, Cl. 365-94.000.
Napiorkowski, John; Jones, Raymond D.; Fukushima, Toshitaka; Koyama, Kazumi; Ueno, Kouji; Miyamura, Tamio; and Kawabata, Yuichi, 4,319,300, Cl. 361-119.000.
Kawabe, Ushio: *See—*
Tarutani, Yoshinobu; Yamada, Hirozi; and Kawabe, Ushio, 4,319,256, Cl. 357-5.000.
Kawada, Shigeki; and Ishida, Hiroshi, to Fujitsu Fanuc Limited. Operation control apparatus for AC motors. 4,319,177, Cl. 318-798.000.
Kawahara, Atsushi; Sawada, Masahiro; and Fujii, Norio, to Nippon Kogaku K.K. Automatic HLA typing apparatus. 4,318,886, Cl. 422-68.000.
Kawano, Shigeyoshi: *See—*
Sato, Yoshio; Kurihara, Nobuo; Nomura, Masahide; Kawano, Shigeyoshi; and Saito, Tadayoshi, 4,319,320. Cl. 364-165.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Yoshida, Toshio, 4,319,121, Cl. 219-121.0ED.
Kawasaki Steel Corporation: *See—*
Kosuge, Norio; Tsugawa, Shunichi; and Kimura, Hajima, 4,318,754, Cl. 148-6.200.
Kayabakogyokabushikikaisha: *See—*
Imai, Kiyonori, 4,318,535, Cl. 267-8.00R.
Kazymov, Boris I.: *See—*
Kuchuk-Yatsenko, Sergei I.; Kazymov, Boris I.; Zagadarchuk, Vasily F.; Solodovnikov, Sergei A.; and Sakharnov, Vasily A., 4,319,117, Cl. 219-100.000.
Keeney, Marvin F., Jr.; and Massey, William A., to General Electric Company. D.C. to D.C. converter. 4,319,315, Cl. 363-22.000.
Kemeny, George A., to Westinghouse Electric Corp. Multistage electromagnetic accelerator. 4,319,168, Cl. 318-135.000.
Kemp, Willard E. Metal casting system. 4,318,437, Cl. 164-7.200.
Kendall Company, The: *See—*
Joung, Jong, 4,318,947, Cl. 428-36.000.
Kendall, Robert M.: *See—*
Schreiber, Richard J.; Kesselring, John P.; and Kendall, Robert M., 4,318,392, Cl. 126-110.00R.
Kennametal Inc.: *See—*
McCreery, James F., 4,318,645, Cl. 407-114.000.
Kennecott Corporation: *See—*
Marcantonio, Paul J., 4,318,789, Cl. 204-152.000.
Kent Manufacturing Co., Inc.: *See—*
Hake, Kenneth, 4,318,444, Cl. 172-456.000.
Kernforschungsanlage Julich GmbH: *See—*
Forster, Siegfried; and Sack, Berthold, 4,318,689, Cl. 431-208.000.
Kerpe, Stase Z. Pharmaceutical package. 4,318,477, Cl. 206-534.000.
Kesling, Haven S., Jr.: *See—*
Hsu, Chao-Yang; and Kesling, Haven S., Jr., 4,318,860, Cl. 260-405.500.
Kesselring, John P.: *See—*
Schreiber, Richard J.; Kesselring, John P.; and Kendall, Robert M., 4,318,392, Cl. 126-110.00R.
Kettner, Charles A.: *See—*
Shaw, Elliott N.; and Kettner, Charles A., 4,318,904, Cl. 424-177.000.
Keuffel & Esser Company: *See—*
Orsen, Stefan, 4,318,617, Cl. 356-373.000.
Trummer, James R., 4,319,197, Cl. 330-11.000.
Keur, Robert I., to A. B. Dick Company. Ink jet printing employing reverse charge coupling. 4,319,251, Cl. 346-1.100.
Khan, Tasadduq: *See—*
Bibring, Herve; Khan, Tasadduq; Rabinovitch, Maurice; Stohr, Jean-Francois; and Hauser, Jean-Michel, 4,318,756, Cl. 148-32.500.
Khanna, Pyare; and Ullman, Edwin F., to Syva Company. Novel ether substituted fluorescein polyamino acid compounds as fluorescers and quenchers. 4,318,846, Cl. 260-112.00B.
Khattab, Ghazi M. A., to Allied Corporation. High melt strength polycaprolactam compositions. 4,319,007, Cl. 525-431.000.

Khazanov, Iosif I.: *See*—
Kulakov, Valery V.; Judin, Valentin P.; Pavlova, Antonina I.; Zlatkis, Anatoly M.; Bagrov, Georgy N.; Zverev, Ivan I.; Khazanov, Iosif I.; Suvorov, Alexei V.; Bobrinsky, Alexei A.; and Pasynkov, Vladimir A., 4,318,955, Cl. 428-235.000.

Khoobiar, Sargis, to Atlantic Richfield Company. Process for producing methacrylic acid. 4,319,042, Cl. 562-535.000.

Kidde, Inc. (Presto Lock Company Division): *See*—
Remington, Richard C.; and Bako, Lazlo, 4,318,287, Cl. 70-71.000.

Kiess, Helmut G.; and Binggeli, Bruno K., to RCA Corporation. Repetitive readout of electrostatically stored information. 4,319,284, Cl. 358-294.000.

Kikuchi, Yoshiki: *See*—
Ozawa, Takashi; Takenouchi, Mutsuo; Sekimoto, Souichi; and Kikuchi, Yoshiki, 4,319,283, Cl. 358-286.000.

Kim, Kwan Y.; and Pellegrin, Michael T., to Owens-Corning Fiberglas Corporation. Glass fiber-forming apparatus. 4,318,724, Cl. 65-1.000.

Kim, Seung G. Automatic toilet bowl cleaner. 4,318,891, Cl. 422-263.000.

Kimball International, Inc.: *See*—
Howell, Stephen L., 4,318,326, Cl. 84-1.010.

Kimberly-Clark Corporation: *See*—
Woon, Lin-Sun, 4,318,407, Cl. 128-285.000.

Kimblin, Clive W.; Holmes, Francis A.; Heberlein, Joachim V. R.; Gorman, Joseph G.; and Slade, Paul G., to Electric Power Research Institute, Inc. Series connected oscillating transverse field interrupter and method. 4,319,296, Cl. 361-4.000.

Kimura, Hajima: *See*—
Kosuge, Norio; Tsugawa, Shunichi; and Kimura, Hajima, 4,318,754, Cl. 148-6.200.

Kimura, Katsuhiro: *See*—
Hirota, Yukitsugu; Kaneko, Yoichi; Sekine, Kenji; Endo, Akira; and Kimura, Katsuhiro, 4,319,244, Cl. 343-8.000.

Kimura, Makoto: *See*—
Fukuhara, Toru; Ogasawara, Akira; and Kimura, Makoto, 4,318,598, Cl. 354-23.00D.

Kimura, Nobuo; Nakai, Yasuhide; and Nishimoto, Yoshiro, to Kobe Steel, Ltd. Surface inspection system for hot radiant material. 4,319,270, Cl. 358-106.000.

Kimura, Shinhichi. Leveling pole. 4,318,228, Cl. 33-161.000.

Kimura, Shiro G.; Ward, William J., III; and Matson, Stephen L., to General Electric Company. Facilitated separation of a select gas through an ion exchange membrane. 4,318,714, Cl. 55-16.000.

Kine, Masayoshi, to Shimano Industrial Company Limited. Brake operating device for a bicycle. 4,318,307, Cl. 74-489.000.

King, James B., to United States of America, Navy. Dual mode incendiary bomblet. 4,318,343, Cl. 102-365.000.

King-Seeley Thermos Co.: *See*—
Olson, John T.; and Westergaard, Robert K., 4,318,278, Cl. 62-347.000.

King, William C.; Lynes, Dennis J.; Riehm, Charles E., Jr.; and Waaben, Sigurd G., to Bell Telephone Laboratories, Incorporated. Single polarity circuit. 4,319,144, Cl. 307-236.000.

Kingsley, Stuart A., to National Research Development Corporation. Signal sensors. 4,319,186, Cl. 324-96.000.

Kingsley, Vernon T. Solar signs. 4,319,310, Cl. 362-183.000.

Kioritz Corporation: *See*—
Satoh, Masatoshi; and Yokocho, Yoetsu, 4,318,203, Cl. 15-344.000.

Kirchmayr, Rudolf: *See*—
Felder, Louis; Kirchmayr, Rudolf; and Husler, 4,318,791, Cl. 204-159.230.

Kirkor, Gabriel, to Firecom, Inc. Alarm system having plural diverse detection means. 4,319,229, Cl. 340-521.000.

Kirkpatrick, Joel L.: *See*—
Hedrich, Loren W.; Patel, Natu R.; and Kirkpatrick, Joel L., 4,319,026, Cl. 542-419.000.

Kirkwood, Creal E.; and Dunagan, Ted O. Power steering system for boats. 4,318,701, Cl. 440-51.000.

Kirsch Company: *See*—
Ford, Alan A., 4,318,576, Cl. 312-264.000.

Kiser, Donald L., to Grain Processing Corporation. Regeneration of molecular sieves. 4,319,057, Cl. 568-916.000.

Kishimoto, Tomio: *See*—
Mitsuya, Eiji; Murakami, Shinichi; Mori, Katsumi; Kishimoto, Tomio; and Kamae, Takahiko, 4,319,267, Cl. 358-75.000.
Yokoo, Kenta; Kishimoto, Tomio; and Sato, Yuichi, 4,319,078, Cl. 178-18.000.

Kishiue, Yasuhiro: *See*—
Utsumi, Masatoki; Ohi, Nobuo; Kishiue, Yasuhiro; and Nose, Kazumi, 4,318,718, Cl. 55-121.000.

Kiss, Zoltan C., Jr. Powerful, collapsible, compact spear gun. 4,318,389, Cl. 124-22.000.

Kitano, Kyozo: *See*—
Sekiguchi, Shizuo; Tano, Tetsuo; Kitano, Kyozo; and Ogoshi, Toshiaki, 4,318,823, Cl. 252-353.000.

Kiyohara, Takehiko: *See*—
Minoura, Kazuo; Kiyohara, Takehiko; and Uchiyama, Haruo, 4,318,582, Cl. 350-6.600.

Klass, Donald L.: *See*—
Ghosh, Sambhunath; and Klass, Donald L., 4,318,993, Cl. 435-299.000.

Klatskin, Jerome B.: *See*—
Rosen, Arye; and Klatskin, Jerome B., 4,319,265, Cl. 357-76.000.

Kleim, Karl-Heinz, to Maschinenfabrik Augsburg-Nuernberg A.G. Railway vestibule connection. 4,318,345, Cl. 105-15.000.

Klein, Erich; and Brunke, Ernst J., to Dragoco Gerberding & Co GmbH. Polysubstituted cyclopentene derivatives. 4,318,831, Cl. 252-522.00R.

Klein, Paul E. Tooth-to-tooth retainer wire installation apparatus. 4,318,694, Cl. 433-22.000.

Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Schmitt, Frederick L.; and Granda, Edward J., to International Flavors & Fragrances Inc. Carboalkoxy alkyl norbornanes and process for preparing same. 4,319,036, Cl. 560-120.000.

Kleynjan, Cornelis: *See*—
Jager, Berend; Brink, Andries; and Kleynjan, Cornelis, 4,318,797, Cl. 208-8.0LE.

Klievoneit, Harold R.; and Smith, Arthur A., to St. Florian Company, Ltd. Wafer grinder. 4,318,250, Cl. 51-134.000.

Kligman, Albert M.; McKenzie, Walter L.; and Ciesla, Peter F., to Westwood Pharmaceuticals, Inc. Method for treating acne vulgaris and compositions useful for that purpose. 4,318,907, Cl. 424-230.000.

Klingberg, Gerd: *See*—
Spielau, Paul; Kuhnel, Werner; Welsch, Dietmar; Klingberg, Gerd; Konermann, Hans E.; and Leeder, Wilfried, 4,319,001, Cl. 525-70.000.
Spielau, Paul; Kuhnel, Werner; Welsch, Dietmar; Klingberg, Gerd; Konermann, Hans E.; and Leeder, Wilfried, 4,319,004, Cl. 525-211.000.
Spielau, Paul; Kuhnel, Werner; Welsch, Dietmar; Klingberg, Gerd; Konermann, Hans E.; and Leeder, Wilfried, 4,319,005, Cl. 525-240.000.

Klose, Dirk R., to United States of America, Army. Methods and apparatus for compacting digital data. 4,319,225, Cl. 340-347.0DD.

Kloss, Gerhard: *See*—
Molter, Michael; Kloss, Gerhard; and Schickel, Eberhard, 4,318,898, Cl. 424-1.000.

Klotz, Hermann, to Teldix G.m.b.H. Pulse generator. 4,319,151, Cl. 310-152.000.

Knapp, John F.: *See*—
Pacansky, Thomas J.; Gruber, Robert J.; and Knapp, John F., 4,318,974, Cl. 430-108.000.

Knechtel, Wilhelm; and Stillger, Friedel, to Canon Kabushiki Kaisha. Dual mode copying apparatus for copying thick and sheet originals. 4,318,609, Cl. 355-11.000.

Knight, George W.: *See*—
Lowery, Kirby, Jr.; Knight, George W.; and May, James A., Jr., 4,319,011, Cl. 526-137.000.

Knorreck, Peter, to Robert Bosch GmbH. Control apparatus for a fuel injection pump for diesel combustion engines. 4,318,379, Cl. 123-387.000.

Kobari, Mitsuru: *See*—
Imai, Teturo; and Kobari, Mitsuru, 4,319,070, Cl. 174-15.0WF.

Kobayashi, Takashi, to Matsushita Seiko Co., Ltd. Atomizing apparatus. 4,318,397, Cl. 128-200.210.

Kobe Steel, Ltd.: *See*—
Kimura, Nobuo; Nakai, Yasuhide; and Nishimoto, Yoshiro, 4,319,270, Cl. 358-106.000.

Koberstein, Edgar: *See*—
Hensel, Jorg; Koberstein, Edgar; Bozon, Alfred; and Volker, Martin H., 4,318,894, Cl. 423-212.000.

Kobori, Toshio, to Minolta Camera Kabushiki Kaisha. Plastic camera body with metal insert. 4,318,604, Cl. 354-288.000.

Koch Process Systems, Inc.: *See*—
Holmes, Arthur S.; and Ryan, James M., 4,318,723, Cl. 62-20.000.

Kochanski, Aloysius J.; Mowery, Frank D.; and Hire, Charles J., to Hi-Stat Manufacturing Company, Inc. Pressure switch and circuit means. 4,318,673, Cl. 417-15.000.

Kocol, James E.; and Schuck, David B., to NCR Corporation. Self-correcting memory system. 4,319,356, Cl. 371-38.000.

Kohl, George: *See*—
Kubbeler, Hans-Klaus; Erpenbach, Heinz; Gehrmann, Klaus; and Kohl, George, 4,319,038, Cl. 560-232.000.

Kohler, Alfred: *See*—
Bauer, Kurt; Dorr, Wilhelm; Kohler, Alfred; Krizek, Oldrich; and Prohaska, Hans, 4,318,200, Cl. 15-250.320.

Kohler, Klaus; Woditsch, Peter; Stutgens, Heribert; Bayer, Eckhard; Nollen, Klaus; and Sander, Hans, to Bayer Aktiengesellschaft. Inorganic pigments with improved gloss and good distribution in lacquer binders. 4,318,843, Cl. 523-212.000.

Kohler, Klaus; Woditsch, Peter; Stutgens, Heribert; Bayer, Eckhard; Nollen, Klaus; and Sander, Hans, to Bayer Aktiengesellschaft. Inorganic pigments with improved gloss and distribution in lacquer binders. 4,318,844, Cl. 524-212.000.

Koike, Kiyoshi, to Nissan Motor Company, Limited. Washer system for an automotive vehicle. 4,318,510, Cl. 239-284.00A.

Kokusan Denki Co., Ltd.: *See*—
Matsuoka, Michihiro; and Ohba, Yasumasa, 4,319,233, Cl. 340-622.000.

Komai, Takeo: *See*—
Daitoku, Koichi; Sakamoto, Hatsuo; Terui, Nobuhiko; Hozumi, Toshiaki; Sekine, Yoshio; Hyodo, Yukio; Ichikawa, Masanori; Wada, Masamichi; Kudo, Tsuyoshi; Nakamura, Manabu; Nakanishi, Nobuaki; Komai, Takeo; and Matsuzawa, Yoshio, 4,318,603, Cl. 354-214.000.

Komorn, Yves; and Schwachhofer, Ghislain, to Rhone-Poulenc Industries. Preparation of beta-methylthiopropionaldehyde. 4,319,047, Cl. 568-41.000.

Kondo, Hiroyuki: *See*—
Mishima, Akio; Kondo, Hiroyuki; and Mukaizaka, Akira, 4,318,735, Cl. 75-0.5BA.

Konermann, Hans E.: *See*—
Spielau, Paul; Kuhnel, Werner; Welsch, Dietmar; Klingberg, Gerd; Konermann, Hans E.; and Leeder, Wilfried, 4,319,001, Cl. 525-70.000.
Spielau, Paul; Kuhnel, Werner; Welsch, Dietmar; Klingberg, Gerd; Konermann, Hans E.; and Leeder, Wilfried, 4,319,004, Cl. 525-211.000.
Spielau, Paul; Kuhnel, Werner; Welsch, Dietmar; Klingberg, Gerd; Konermann, Hans E.; and Leeder, Wilfried, 4,319,005, Cl. 525-240.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Habu, Takeshi; and Honda, Chika, 4,318,979, Cl. 430-434.000.

Konrath, Karl: *See*—
Eheim, Franz; Konrath, Karl; Schwarz, Manfred; and Weiss, Otmar, 4,318,382, Cl. 123-502.000.

Konstantin, Anatole E. Insert bander. 4,318,685, Cl. 425-508.000.

Konther, Siegfried; Chamorro, Sigfrido K.; and Chamorro, Udi K. Rotary internal combustion engines. 4,318,370, Cl. 123-44.00C.

Kopito, Louis: *See*—
Schuster, Samuel R.; Kopito, Louis; and Kosasky, Harold, 4,318,414, Cl. 128-759.000.

Korach, Haim. Device for stabilizing a tooth and a method for its use. 4,318,698, Cl. 433-225.000.

Korpman, Ralf, to Permacel. Absorbent products. 4,318,408, Cl. 128-287.000.

Kosanovich, George M.; and Salee, Gideon, to Hooker Chemicals & Plastics Corp. Semi or fully continuous process for polyester of bisphenol and dicarboxylic acid by transesterification polymerization and product thereof. 4,319,017, Cl. 528-176.000.

Kosasky, Haroid: *See*—
Schuster, Samuel R.; Kopito, Louis; and Kosasky, Harold, 4,318,414, Cl. 128-759.000.

Kosinski, Alfred E., to Bendix Corporation, The. Pressurized fluid chamber with supply and bleed fitting. 4,318,460, Cl. 188-352.000.

Kosuge, Norio; Tsugawa, Shunichi; and Kimura, Hajima, to Kawasaki Steel Corporation. Surface treatment method for tin-free steel. 4,318,754, Cl. 148-6.200.

Kosugi, Isao: *See*—
Shingu, Shitta; Takahashi, Atsushi; and Kosugi, Isao, 4,318,332, Cl. 91-29.000.

Kotani, Shintaro; Abiko, Ichimatsu; Takano, Rikuo; Hoshino, Yasushi; Tokunaga, Yukio; and Tateishi, Kazuyoshi, to Oki Electric Industry Co., Ltd. Optical print head for optical printing devices. 4,318,597, Cl. 354-5.000.

Kouno, Kageaki: *See*—
Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,318,916, Cl. 424-274.000.

Kouse, Charles H.: *See*—
Nelson, Dana W.; and Kouse, Charles H., 4,318,334, Cl. 91-59.000.

Kowalczyk, Walter. Remote control precision step attenuator. 4,319,184, Cl. 323-354.000.

Koyama, Kazumi: *See*—
Fukushima, Toshitaka; Koyama, Kazumi; Ueno, Kouji; Miyamura, Tamio; and Kawabata, Yuichi, 4,319,341, Cl. 365-94.000.
Napiorkowski, John; Jones, Raymond D.; Fukushima, Toshitaka; Koyama, Kazumi; Ueno, Kouji; Miyamura, Tamio; and Kawabata, Yuichi, 4,319,300, Cl. 361-119.000.

Koyama, Tomoyuki;, to Nippon Gakki Seizo Kabushiki Kaisha. Low alloy lead frame. 4,318,740, Cl. 75-125.000.

Koyatsu, Osamu: *See*—
Sato, Koji; Koyatsu, Osamu; Okitsu, Takumi; Harada, Yoshio; and Yamamura, Yuji, 4,318,276, Cl. 62-126.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Peehs, Martin; and Petri, Werner, 4,318,492, Cl. 220-228.000.
Proll, Norbert; Bertz, Siegfried; and Grabener, Karl-Heinz, 4,318,776, Cl. 376-254.000.

Kragh, Loren G. Saturated liquor cooling tower. 4,318,772, Cl. 159-45.000.

Kraus, Fritz, to Voest-Alpine Aktiengesellschaft. Process and plant for producing hydraulic cement. 4,318,745, Cl. 106-100.000.

Kraus, Peter: *See*—
Fest, Christa; Kraus, Peter; and Scheinpflug, Hans, 4,318,924, Cl. 424-322.000.
Kuhle, Engelbert; Kraus. Peter; and Marhold, Albrecht, 4,318,919, Cl. 424-278.000.

Kreeger, Russell L., to Union Carbide Corporation. Method for increasing the activity of Friedel-Crafts catalyst. 4,319,067, Cl. 585-459.000.

Kretschmer, Klaus; and Tuschy, Peter, to Siemens Aktiengesellschaft. Push-on end termination for shielded power cable conductors of sector-shaped conductor cross section. 4,319,073, Cl. 174-73.00R.

Kriebel, Manfred: *See*—
Doerges, Alexander; Kriebel, Manfred; and Schlauer, Johann, 4,318,716, Cl. 55-48.000.

Kriesel, Kenneth W.: *See*—
Showalter, M. Robert; Kriesel, Kenneth W.; and Siewert, Charles L., 4,318,386, Cl. 123-590.000.

Krizek, Oldrich: *See*—
Bauer, Kurt; Dorr, Wilhelm; Kohler, Alfred; Krizek, Oldrich; and Prohaska, Hans, 4,318,200, Cl. 15-250.320.

Krug, Robert W.: *See*—
Alvarez, Joseph A., III; Brennen, John F.; and Krug, Robert W., 4,319,353, Cl. 370-104.000.

Krugel, Karl-Heinz: *See*—
Tappeiner, Hermann; Paessler, Ernst-Robert; Smutny, Kurt; and Krugel, Karl-Heinz, 4,319,224, Cl. 340-310.00R.

Krumins, Ainis: *See*—
Brannan, Robert C.; Fogoros, Robert J.; Headrick, Michael R.; Krumins, Ainis; and Pryor, Robert F., 4,318,612, Cl. 355-14.0FU.

Krupa, Andrew S.: *See*—
Velenyi, Louis J.; Dolhyj, Serge R.; and Krupa, Andrew S., 4,319,066, Cl. 585-437.000.

Kub, Francis J., to Westinghouse Electric Corp. Self-aligned, field aiding double polysilicon CCD electrode structure. 4,319,261, Cl. 357-24.000.

Kubbeler, Hans-Klaus; Erpenbach, Heinz; Gehrmann, Klaus; and Kohl, George, to Hoechst Aktiengesellschaft. Production of 1,1-diacetoxyethane. 4,319,038, Cl. 560-232.000.

Kubo, Keiji: *See*—
Tsuyuguchi, Michio; Kubo, Keiji; and Takahashi, Hiromichi, 4,318,779, Cl. 201-6.000.

Kucharczyk, Eckhard, to Siegenia-Frank AG. Safety control unit. 4,319,169, Cl. 318-266.000.

Kuchuk-Yatsenko, Sergei I.; Kazymov, Boris I.; Zagadarchuk, Vasily F.; Solodovnikov, Sergei A.; and Sakharnov, Vasily A. Method of flash butt welding. 4,319,117, Cl. 219-100.000.

Kudo, Tsuyoshi: *See*—
Daitoku, Koichi; Sakamoto, Hatsuo; Terui, Nobuhiko; Hozumi, Toshiaki; Sekine, Yoshio; Hyodo, Yukio; Ichikawa, Masanori; Wada, Masamichi; Kudo, Tsuyoshi; Nakamura, Manabu; Nakanishi, Nobuaki; Komai, Takeo; and Matsuzawa, Yoshio, 4,318,603, Cl. 354-214.000.

Kufferath-Kassner, Karl, to GKD Gebr. Kufferath GmbH & Co. KG. Wire mesh band. 4,318,469, Cl. 198-842.000.

Kuhle, Engelbert; Kraus, Peter; and Marhold, Albrecht, to Bayer Aktiengesellschaft. Combating bacteria with tetrachlorophthalamic acids. 4,318,919, Cl. 424-278.000.

Kuhnel, Werner: *See*—
Spielau, Paul; Kuhnel, Werner; Welsch, Dietmar; Klingberg, Gerd; Konermann, Hans E.; and Leeder, Wilfried, 4,319,001, Cl. 525-70.000.
Spielau, Paul; Kuhnel, Werner; Welsch, Dietmar; Klingberg, Gerd; Konermann, Hans E.; and Leeder, Wilfried, 4,319,004, Cl. 525-211.000.
Spielau, Paul; Kuhnel, Werner; Welsch, Dietmar; Klingberg, Gerd; Konermann, Hans E.; and Leeder, Wilfried, 4,319,005, Cl. 525-240.000.

Kulakov, Valery V.; Judin, Valentin P.; Pavlova, Antonina I.; Zlatkis, Anatoly M.; Bagrov, Georgy N.; Zverev, Ivan I.; Khazanov, Iosif I.; Suvorov, Alexei V.; Bobrinsky, Alexei A.; and Pasynkov, Vladimir A. Method for making a carbonic friction product. 4,318,955, Cl. 428-235.000.

Kulprathipanja, Santi; and Neuzil, Richard W., to UOP Inc. Process for the separation of ethanol from water. 4,319,058, Cl. 568-917.000.

Kumai, Seisaku: *See*—
Yamabe, Masaaki; Munekata, Seiji; and Kumai, Seisaku, 4,318,867, Cl. 260-544.00F.

Kumok, Simona T.: *See*—
Styskin, Evgeny L.; Gurvich, Yakov A.; Kumok, Simona T.; Starikova, Olga F.; Rutman, Grigory I.; Michurov, Jury I.; Yanshevsky, Vladimir A.; Gusev, Vladimir K.; and Liakumovich, Alexandr G., 4,319,052, Cl. 568-727.000.

Kunz Maschinen-und Apparatebau GmbH: *See*—
Kunz, Wolfgang, 4,318,199, Cl. 15-77.000.

Kunz, Wolfgang, to Kunz Maschinen-und Apparatebau GmbH. Machine for burring and cleaning of substantially plane work pieces. 4,318,199, Cl. 15-77.000.

Kuraishi, Kaoru; and Goto, Toru. Electronic flash apparatus with function to bounce flash. 4,319,165, Cl. 315-241.00P.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Enomoto, Satoru; Asano, Kiro; Tamura, Humio; and Tanaka, Hiromitsu, 4,318,908, Cl. 424-243.000.

Kurihara, Nobuo: *See*—
Sato, Yoshio; Kurihara, Nobuo; Nomura, Masahide; Kawano, Shigeyoshi; and Saito, Tadayoshi, 4,319,320, Cl. 364-165.000.

Kurland, Irwin J.; and Graube, Andrejs, to Hughes Aircraft Company. Process for fabricating photosensitive layers on plastic substrates. 4,318,970, Cl. 430-2.000.

Kurobe, Moriji; Tsuji, Ryusuke; Imao, Eiichi; Masuyama, Takayuki; Nagata, Eizi; and Kamada, Kazunori, to Kabushiki Kaisha Toyota Chuo Kenkyusho; Toyota Jidosha Kogyo Kabushiki Kaisha; and Mitsui Toatsu Chemicals Incorporated. Ultraviolet-absorbing amino compound and method of making. 4,319,016, Cl. 528-127.000.

Kuroki, Katsuro; Iwayama, Kenzo; and Sato, Takashi, to Nippon Steel Corporation. Method for producing a grain-oriented magnetic steel sheet having good magnetic properties. 4,318,758, Cl. 148-111.000.

Kurono, Hitoshi: *See*—
Kajioka, Mitsuru; Kurono, Hitoshi; Okawa, Katsumasa; and Harada, Tatsuo, 4,318,731, Cl. 71-92.000.

Kuwahara, Kiyoshi, to Anritsu Electric Company Limited. Method of locating faulty pulse repeaters. 4,319,080, Cl. 179-175.31R.

Kuwahara, Toru: *See*—
Edahiro, Takao; Tanaka, Gotaro; Kuwahara, Toru; and Kyoto, Michihisa, 4,318,726, Cl. 65-18.200.

Kuznetsov, Vladimir N.; Smirnova, Nadezhda F.; and Karpov, Vladimir D. Dry film multilayer photoresist element. 4,318,975, Cl. 430-260.000.

Kwan, Shue-Yu, to Westinghouse Electric Corp. Temperature compensated wide dynamic range linear envelope detector. 4,319,196, Cl. 329-204.000.

Kwech, Horst: *See—*
Wachs, Edward H.; and Kwech, Horst, 4,318,391, Cl. 125-14.000.

Kyoto, Michihisa: *See—*
Edahiro, Takao; Tanaka, Gotaro; Kuwahara, Toru; and Kyoto, Michihisa, 4,318,726, Cl. 65-18.200.

L. Schuler Pressen GmbH: *See—*
Bareis, Alfred; Bergmann, Ewald; and Dommer, Hans-Martin, 4,318,325, Cl. 83-530.000.

La Crosse Cooler Company: *See—*
Spring, Carl E., 4,318,496, Cl. 221-129.000.

Labouliere, Elzear R.: *See—*
deVos, Hendrick A. J.; and Labouliere, Elzear R., 4,319,312, Cl. 362-282.000.

Lacefield, William B., to Eli Lilly and Company. 5,6-Diaryl-1,2,4-triazines as topical antithrombotic agents. 4,318,911, Cl. 424-249.000.

Laga, Gerry T.: *See—*
Harnagel, Gary L.; Laga, Gerry T.; Harrison, Joseph M.; and Twaddell, Victor A., 4,319,258, Cl. 357-15.000.

Lahoda, Edward J.; Eckhardt, David A.; and Grover, Donald L., to Westinghouse Electric Corp. Electrolytic decontamination. 4,318,786, Cl. 204-141.500.

Lamos, Richard A., to International Business Machines Corporation. Apparatus for and method of collating sorting and stacking sheets concurrently. 4,318,539, Cl. 270-58.000.

Lancashire Tar Distillers Limited: *See—*
Turner, Alan, 4,318,824, Cl. 252-421.000.

Landreth, Philip R., to Schlegel Corporation. Grippable sliding seal strip. 4,318,249, Cl. 49-490.000.

Lang, David J., to Sundstrand Corporation. Force limiting device. 4,318,304, Cl. 74-89.150.

Lang, Robert J.; and Pabst, Joanne K., to Exxon Research & Engineering Co. Catalytic coal gasification process. 4,318,712, Cl. 48-202.000.

Lange, Peter M.: *See—*
Struver, Werner; Heller, Harold; and Lange, Peter M., 4,319,015, Cl. 526-329.100.

Lanier Business Products, Inc.: *See—*
Bolick, Fred C., Jr.; Titus, Theodore, IV; and Bagley, Julius B., 4,319,290, Cl. 360-92.000.

Lansen, Jacqueline: *See—*
Roncucci, Romeo; and Lansen, Jacqueline, 4,318,706, Cl. 23-230.00B.

Lapierre, Philippe. Fast-winding spring motor. 4,318,455, Cl. 185-39.000.

Lapsker, Arie. Low winding resistance protective device. 4,319,297, Cl. 361-23.000.

Larkin, Elmer D.: *See—*
Benefield, William F.; and Larkin, Elmer D., 4,318,653, Cl. 414-24.500.

la Rocca, Aldo Vittorio, to Fiat Auto S.p.A. Method and apparatus for the control of shielding gases used in power laser processes. 4,319,120, Cl. 219-121.0FS.

Larson, Frederick R.; Dangremond, Rodger L.; Reuschel, Donald L.; and Moore, James I., to Ex-Cell-O Corporation. Press locking apparatus. 4,318,682, Cl. 425-411.000.

Larsson, Bertil S. W.; Bokfors, Stefan J. A.; and Olsson, Karl G., to AB Svenska Flaktfabriken. Apparatus for conveying waste materials by suction. 4,318,643, Cl. 406-14.000.

Lasocki, Christine: *See—*
Bayer, Alfred M.; Faulkner, Norman K.; and Lasocki, Christine, 4,318,193, Cl. 4-222.000.

Lavigne, Andre, to Videocolor, S.A. Method and apparatus of automatically processing and correcting the blocking voltage of an electron gun. 4,319,166, Cl. 315-384.000.

Lawrence, William A.; and O'Dea, John A., to Jaeger Machine Company. Transit concrete mixer with displaceable charging hopper. 4,318,621, Cl. 366-41.000.

Lay, Giles P., to Layco, Inc. Stator apparatus for a moving vehicle. 4,318,565, Cl. 296-1.00S.

Layco, Inc.: *See—*
Lay, Giles P., 4,318,565, Cl. 296-1.00S.

Le Material Telephonique: *See—*
Allain, Jacques M.; Courtel, Daniel; Joubert, Jean L.; and Vidonne, Jean P., 4,319,322, Cl. 364-200.000.

Leach, John G., to General Electric Company. Fuse supporting means having notches containing a gas evolving material. 4,319,212, Cl. 337-159.000.

Lear Siegler, Inc.: *See—*
Bodewes, Hermanus J. A.; and van den Goor, Jacobus M., 4,318,468, Cl. 198-718.000.

LeBlanc, Peter E., to Bird Machine Company, Inc. Screening apparatus. 4,318,805, Cl. 209-273.000.

Leclanche' S.A.: *See—*
Ruetschi, Paul, 4,318,967, Cl. 429-48.000.

Lee, Delbert, to Alpha Nova Engineering Corp. Tennis ball retrieving device. 4,318,654, Cl. 414-440.000.

Lee, George T.; Lees, John N., Jr.; and Pukita, Paul M., to Allis-Chalmers Corporation. Method for gasifying cellulosic material. 4,318,713, Cl. 48-203.000.

Lee, Patrick S. K., to Sperry Corporation. Current injection tapped delay line spectral shaping equalizer and differentiator. 4,319,288, Cl. 360-46.000.

Lee, Wei: *See—*
Shu, Jing S.; Lee, Wei; Varnell, Gilbert L.; and Bartelt, John L., 4,318,976, Cl. 430-287.000.

Lee, Yu C.: *See—*
Scott, Lawrence M.; Wolf, Irving; and Lee, Yu C., 4,318,734, Cl. 75-0.5BA.

Leeder, Wilfried: *See—*
Spielau, Paul; Kuhnel, Werner; Welsch, Dietmar; Klingberg, Gerd; Konermann, Hans E.; and Leeder, Wilfried, 4,319,001, Cl. 525-70.000.
Spielau, Paul; Kuhnel, Werner; Welsch, Dietmar; Klingberg, Gerd; Konermann, Hans E.; and Leeder, Wilfried, 4,319,004, Cl. 525-211.000.
Spielau, Paul; Kuhnel, Werner; Welsch, Dietmar; Klingberg, Gerd; Konermann, Hans E.; and Leeder, Wilfried, 4,319,005, Cl. 525-240.000.

Leek, Stanley. Guidance systems. 4,318,515, Cl. 244-3.160.

Leenderts, Everardus J. A. M.: *See—*
Heitman, Herwarth; van der Drift, Johannes K.; Leenderts, Everardus J. A. M.; and Grootveld, Herman H., 4,318,852, Cl. 260-239.100.

Leenhouts, Albert C., to Superior Electric Company, The. Stabilized stepping-motor system. 4,319,175, Cl. 318-696.000.

Lees, John N., Jr.: *See—*
Lee, George T.; Lees, John N., Jr.; and Pukita, Paul M., 4,318,713, Cl. 48-203.000.

Lehman, Albert L., to A. Finkl & Sons Co. Steel having improved surface and reduction of area transverse properties, and method of manufacture thereof. 4,318,739, Cl. 75-124.000.

Lehmann, Wolfgang; Muller, Friedhelm; Cramn, Gunther; Hammerstrom, Knut; and Lobach, Wilfried, to Bayer Aktiengesellschaft. Polyamines containing amide groups. 4,319,019, Cl. 528-324.000.

Leiber, Heinz; and Mergenthaler, Robert, to Robert Bosch GmbH. Brake force amplifier. 4,318,272, Cl. 60-553.000.

Lein, Joseph: *See—*
Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,318,916, Cl. 424-274.000.

Leistritz, Hans K. Heat exchange afterburner and muffler apparatus for engine exhaust gases. 4,318,887, Cl. 422-173.000.

Lembke, Russell B.: *See—*
Doyle, James E.; and Lembke, Russell B., 4,318,840, Cl. 523-144.000.

Lemelson, Jerome H. Molding apparatus. 4,318,874, Cl. 264-40.100.

Lennox, Duncan D.: *See—*
Tsai, Allan K. S.; Lennox, Duncan D.; and Brewer, Arthur D., 4,319,033, Cl. 549-15.000.

Le Nohaic, Yves: *See—*
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Leonard, Judson S.: *See—*
Ermolovich, Thomas R.; Stewart, Robert E.; Leonard, Judson S.; and Cutler, David N., 4,319,323, Cl. 364-200.000.

Leonard, Thomas M.: *See—*
Evans, Robert M.; and Leonard, Thomas M., 4,318,959, Cl. 428-364.000.

Lesaffre et Cie: *See—*
Clement, Philippe; and Loiez nee Hennette, Annie, 4,318,929, Cl. 426-62.000.
Clement, Philippe; and Loiez nee Hennette, Annie, 4,318,930, Cl. 426-62.000.

Lese, Henri K.; Sebulsky, Raynor T.; Stanulonis, John J.; Tabacek, Joseph A.; and Vogel, Roger F., to Gulf Research & Development Company. Supported nickel-molybdenum catalyst, preparation thereof, and hydrodesulfurization of hydrocarbon fractions using same. 4,318,801, Cl. 208-216.00R.

Letraset International Limited: *See—*
Smith, Brian J.; and Taylor, Geoffrey R., 4,318,953, Cl. 428-200.000.

Letton, James C.; and Yunker, Mark J., to Procter & Gamble Company, The. Stabilized aqueous enzyme composition. 4,318,818, Cl. 252-174.120.

Lewis, Bernard L., to United States of America, Navy. Integrated weapon control radar system. 4,319,242, Cl. 343-6.00R.

Lewis, Charles W. Plant supporting. 4,318,247, Cl. 47-43.000.

Li, Thomas M.: *See—*
Burd, John F.; and Li, Thomas M., 4,318,981, Cl. 435-7.000.

Liakumovich, Alexandr G.: *See—*
Styskin, Evgeny L.; Gurvich, Yakov A.; Kumok, Simona T.; Starikova, Olga F.; Rutman, Grigory I.; Michurov, Jury I.; Yanshevsky, Vladimir A.; Gusev, Vladimir K.; and Liakumovich, Alexandr G., 4,319,052, Cl. 568-727.000.

Liautaud, James P. Mounting system for a mobile microphone. 4,319,097, Cl. 179-146.00R.

Libbey-Owens-Ford Company: *See—*
Tompkins, Raymond E., 4,318,562, Cl. 294-88.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Malinowski, Christopher W.; Rinderle, Heinz; and Siegle, Martin, 4,319,227, Cl. 340-347.0DD.
Scholz, Werner, 4,319,205, Cl. 333-14.000.

Lieb, Nathaniel H.; and Alderman, Albert D., Jr., to Venture Technology, Inc. Handpiece. 4,318,695, Cl. 433-132.000.

Lieberman, Larry: *See*—
Smith, Glenn W., 4,318,261, Cl. 52-582.000.
Lifeline Products, Inc.: *See*—
Marshall, James J., 4,318,927, Cl. 426-11.000.
Marshall, James J., 4,318,989, Cl. 435-205.000.
Liggett, Richard K., to Warner & Swasey Company, The. Dual function remote steering control. 4,318,451, Cl. 180-324.000.
Lilenfeld, Harvey V.: *See*—
Richardson, Ralph J.; and Lilenfeld, Harvey V., 4,318,895, Cl. 423-579.000.
Linder, Seymour M.: *See*—
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Lindmark, Craig L.: *See*—
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Lindstrom, John A.; and Cunningham, Donald M., to Emerson Electric Co. Electric heating elements. 4,319,127, Cl. 219-523.000.
Lion Fat & Oil Co., Ltd., The: *See*—
Sekiguchi, Shizuo; Tano, Tetsuo; Kitano, Kyozo; and Ogoshi, Toshiaki, 4,318,823, Cl. 252-353.000.
Lisiecki, Robert E., to Ex-Cell-O Corporation. Liquid container with straw opening means. 4,318,479, Cl. 206-633.000.
Lisotti, Silvana: *See*—
Ippoliti, Augusto; and Lisotti, Silvana, 4,319,308, Cl. 362-106.000.
Lissmyr, Per O.; and Haglof, Sven. Valve mechanism with controlled opening means. 4,318,530, Cl. 251-54.000.
Litman, David J.; Harel, Zvi; and Ullman, Edwin F., to Syva Company. Macromolecular fluorescent quencher particle in specific receptor assays. 4,318,707, Cl. 23-230.00B.
Litton Industrial Products, Inc.: *See*—
Carroll, Richard R.; and Papp, Alan M., 4,318,665, Cl. 414-728.000.
Litton Systems, Inc.: *See*—
Maughmer, Robert W., 4,318,300, Cl. 73-178.00R.
Livesay, Richard E., to Caterpillar Tractor Co. Linear motion impactor device. 4,318,446, Cl. 173-13.000.
LLauge, Joaquin R., to ITW Espana S.A. Plug-rivet for securing panels or the like. 4,318,650, Cl. 411-38.000.
Llopart, Jean-Paul, to Establissement Rinrone. Medicinal composition for external use for treating wounds. 4,318,906, Cl. 424-195.000.
Lobach, Wilfried: *See*—
Lehmann, Wolfgang; Muller, Friedhelm; Cramn, Gunther; Hammerstrom, Knut; and Lobach, Wilfried, 4,319,019, Cl. 528-324.000.
Lobmann, Michele; and Florent, Gerard, to Smithkline-Rit. Live influenza virus vaccine and the preparation thereof. 4,318,903, Cl. 424-89.000.
Lockheed Electronics Co., Inc.: *See*—
Dow, John, Jr.; Oetting, William A.; Yessian, Richard J.; and Brady, Thomas J., 4,319,128, Cl. 235-61.0PD.
Loiez nee Hennette, Annie: *See*—
Clement, Philippe; and Loiez nee Hennette, Annie, 4,318,929, Cl. 426-62.000.
Clement, Philippe; and Loiez nee Hennette, Annie, 4,318,930, Cl. 426-62.000.
Lokken, Oddvin, to Solar Dental Co., Inc. Odontologic compositions and preparation thereof. 4,318,742, Cl. 106-35.000.
Lombardi, Anthony: *See*—
Peled, Emanuel; and Lombardi, Anthony, 4,318,969, Cl. 429-105.000.
Lombardo, Igino; and Hansen, W. Peter, to Ortho Diagnostics, Inc. Method and apparatus for positioning the point of droplet formation in the jetting fluid of an electrostatic sorting device. 4,318,480, Cl. 209-3.100.
Lombardo, Igino; and Barry, Donald E., to Ortho Diagnostics, Inc. Method for automatically setting the correct phase of the charge pulses in an electrostatic flow sorter. 4,318,481, Cl. 209-3.100.
Lombardo, Igino; and Barry, Donald E., to Ortho Diagnostics, Inc. Automatic relative droplet charging time delay system for an electrostatic particle sorting system using a relatively moveable stream surface sensing system. 4,318,483, Cl. 209-3.100.
Lombardo, Igino: *See*—
Barry, Donald E.; and Lombardo, Igino, 4,318,482, Cl. 209-3.100.
Long, Donald A.: *See*—
Charles, Stanley E.; Long, Donald A.; Katsenis, Peter G.; and Mosher, Walter W., Jr., 4,318,234, Cl. 40-21.00C.
Long, Harry L. Modular interior storm window and heat trap. 4,318,255, Cl. 52-202.000.
Long, John V.: *See*—
Gagliani, John; and Long, John V., 4,319,000, Cl. 521-189.000.
Looye, Bob; deHair, Johannes T. W.; and Bakker, Cornelis, to U.S. Philips Corporation. Luminescent screen and low pressure mercury vapor discharge lamp containing the same. 4,319,161, Cl. 313-486.000.
Lopez Calderon, Isabel: *See*—
Murillo Araujo, Francisco J.; Lopez Calderon, Isabel; Lopez Diaz, Isabel; and Cerda Olmedo, Enrique, 4,318,987, Cl. 435-172.000.
Lopez Diaz, Isabel: *See*—
Murillo Araujo, Francisco J.; Lopez Calderon, Isabel; Lopez Diaz, Isabel; and Cerda Olmedo, Enrique, 4,318,987, Cl. 435-172.000.
L'Oreal: *See*—
Zaffran, Christian; Ser, Jean-Claude; and Yquel, Jean-Pierre, 4,318,297, Cl. 73-78.000.
Lott, Donald L.; Schockelt, Guenter G.; and Worrix, Matthew L., to Siemens-Allis, Inc. High voltage air disconnect switch incorporating a puffer type load break switch. 4,319,105, Cl. 200-148.00A.
Lowe Alpine Systems, Inc.: *See*—
Lowe, Greg E.; and Lowe, Michael R., 4,318,502, Cl. 224-153.000.
Lowe, Greg E.; and Lowe, Michael R., to Lowe Alpine Systems, Inc. Back pack having a releasable climbing harness. 4,318,502, Cl. 224-153.000.
Lowe, Michael R.: *See*—
Lowe, Greg E.; and Lowe, Michael R., 4,318,502, Cl. 224-153.000.
Lowery, Kirby, Jr.; Knight, George W.; and May, James A., Jr., to Dow Chemical Co., The. High efficiency, high temperature catalyst for polymerizing olefins. 4,319,011, Cl. 526-137.000.
Lowry, James, to Westinghouse Electric Corp. Terminal slowdown control for elevator system. 4,318,456, Cl. 187-29.00R.
Lucas Industries Limited: *See*—
Boucher, David G., 4,318,962, Cl. 428-458.000.
Dorsch, Erich G.; and Holz, Dietrich, 4,318,457, Cl. 188-1.110.
Hill, William F., 4,319,301, Cl. 361-152.000.
Lucchini, Paolo; and Nebbia, Luciano, to CSELT, Centro Studi e Laboratori Telecomunicazioni S.p.A. Multichannel digital speech synthesizer. 4,319,084, Cl. 179-1.0SM.
Ludke, Christian: *See*—
Falk, Heinz; Hoffman, Erwin; and Ludke, Christian, 4,318,614, Cl. 356-311.000.
Lujic, Ante, to Eaton Corporation. Temperature dependent electric current-regulator-or-limiting switching element for electrical appliances: especially electrically heated devices. 4,319,126, Cl. 219-512.000.
Luk, Kong; Clayton, John P.; and Rogers, Norman H., to Beecham Group Limited. Antibacterial compounds. 4,318,856, Cl. 260-345.80R.
Lukas, Bohumir: *See*—
Schmidt-Ruppin, Karl H.; Lukas, Bohumir; and Wiesendanger, Walter, 4,318,926, Cl. 424-330.000.
Lunde, Peter A.; and Phillips, Preston S., to Ocean Resources Engineering, Inc. Method and apparatus for controlling an underwater well blowout. 4,318,442, Cl. 166-357.000.
Lunn, William H. W.: *See*—
Herron, David K.; and Lunn, William H. W., 4,319,028, Cl. 544-26.000.
Luwa AG: *See*—
Ferri, Johann W.; Gasser, Hermann; and Di Benedetto, Paulo, 4,318,206, Cl. 19-159.00R.
Lynes, Dennis J.: *See*—
King, William C.; Lynes, Dennis J.; Riehm, Charles E., Jr.; and Waaben, Sigurd G., 4,319,144, Cl. 307-236.000.
Lys, Jacques: *See*—
Berger, Michel; Lys, Jacques; and Demaire, Georges, 4,318,968, Cl. 429-105.000.
M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
Pietsch, Erich; and Simeth, Claus, 4,318,341, Cl. 101-365.000.
Mabuchi Motor Co. Ltd.: *See*—
Mabuchi, Takaichi, 4,319,153, Cl. 310-221.000.
Mabuchi, Takaichi, to Mabuchi Motor Co. Ltd. Electric motor with controllable mechanical wear and spark generation. 4,319,153, Cl. 310-221.000.
Macarle, Anthony J., Jr. Reversible, portable direction sign. 4,318,238, Cl. 40-607.000.
MacCarthy, Patrick, to Bisque, Ramon E.; and Stermole, Franklin J. Precession-resistant yo-yo device. 4,318,243, Cl. 46-61.000.
MacDonald, Clyde O., to Halliburton Company. Acoustic frequency spectrum logging. 4,319,346, Cl. 367-32.000.
Machan, Ivo: *See*—
Boccali, Filbert J.; Crompton, Eric J.; and Machan, Ivo, 4,319,193, Cl. 324-418.000.
Mackinnon, John W. M.: *See*—
Clitherow, John W.; Bradshaw, John; Mackinnon, John W. M.; Price, Barry J.; Martin-Smith, Michael; and Judd, Duncan B., 4,318,913, Cl. 424-267.000.
Magder, Jules, to Princeton Organics Incorporated. Lightweight ceramic composition. 4,318,996, Cl. 501-84.000.
Magers, Thomas A.; and Tabb, David L., to Miles Laboratories, Inc. Stabilized composition, test device, and method for detecting the presence of a sugar in a test sample. 4,318,984, Cl. 435-14.000.
Magers, Wallace F.; and Palmisano, John J., to Realex Corporation. Uplocking dispensing pump. 4,318,498, Cl. 222-153.000.
Magid, Sidney H.; and Chung, Wang C. Inflatable throwing toy. 4,318,244, Cl. 46-74.00D.
Mahnke, Earl: *See*—
Ericson, John E.; and Mahnke, Earl, 4,318,578, Cl. 339-14.00P.
Mail-Ex Corporation: *See*—
Russell, Robert J., 4,318,322, Cl. 83-94.000.
Maitlis, Peter M.: *See*—
Cook, John; and Maitlis, Peter M., 4,319,043, Cl. 562-537.000.
Maki-Hoimela, Veijo; and Rysti, Alpo, to Rysti, Alpo. Method and apparatus for drop-sorting of timber. 4,318,807, Cl. 209-517.000.
Maki, Takao; and Murayama, Kenji, to Mitsubishi Chemical Industries Limited. Process for producing pyrogallol. 4,319,054, Cl. 568-772.000.
Makino, Itsuo: *See*—
Hirai, Kentaro; Matsutani, Shigeru; Ishiba, Teruyuki; Makino, Itsuo; Doteuchi, Masami; and Otani, Koichi, 4,318,858, Cl. 260-347.200.
Malaviya, Shashi D., to International Business Machines Corp. High speed 3-way exclusive OR logic circuit. 4,319,148, Cl. 307-471.000.
Malinowski, Christopher W.; Rinderle, Heinz; and Siegle, Martin, to Licentia Patent-Verwaltungs-G.m.b.H. Three state signaling system. 4,319,227, Cl. 340-347.0DD.

Malipier, Louis; and Marconnet, Guy, to Creusot-Loire. Apparatus for producing bituminous coated products from aggregates, bitumen and solid materials likely to deteriorate at high temperature. 4,318,620, Cl. 366-25.000.

Malloy, Thomas P.; and Tufano, Michael D., to UOP Inc. Chiral supports for resolution of racemates. 4,318,819, Cl. 252-184.000.

Malloy, Thomas P.; and Tufano, Michael D., to UOP Inc. Chiral supports for resolution of racemates. 4,318,820, Cl. 252-184.000.

Mancini, Paolo E., to International W Systems S.r.l. Connecting device for construction panels. 4,318,628, Cl. 403-231.000.

Mandell, John F.: *See*—
Agrawal, Purushottam D.; and Mandell, John F., 4,318,882, Cl. 264-521.000.

Mannesmann DeMag AG: *See*—
Driemeyer, Manfred, 4,318,736, Cl. 75-38.000.

Manno Uniform and Security Equipment Corp.: *See*—
Capano, James J., 4,318,503, Cl. 224-244.000.

Manzke, Klaus; Hammerschmitt, Peter; Schneider, Richard; and Uhl, Karl, to BASF Aktiengesellschaft. Device for positioning magnetic heads in memory processing units. 4,319,354, Cl. 360-106.000.

Marathon Oil Company: *See*—
Wygant, N. D., 4,319,319, Cl. 364-104.000.

Marcantonio, Paul J., to Kennecott Corporation. Electrochemical removal of heavy metals such as chromium from dilute wastewater streams using flow through porous electrodes. 4,318,789, Cl. 204-152.000.

Marconi Company Limited, The: *See*—
Fitz, Philip J., 4,319,246, Cl. 343-17.10R.
Sosin, Boleslaw M., 4,319,198, Cl. 330-296.000.
Warren, Kenneth A. J., 4,319,247, Cl. 343-17.700.

Marconnet, Guy: *See*—
Malipier, Louis; and Marconnet, Guy, 4,318,620, Cl. 366-25.000.

Marhoff, Paul: *See*—
Gall, Arthur; and Marhoff, Paul, 4,319,281, Cl. 358-244.000.

Marhold, Albrecht: *See*—
Kuhle, Engelbert; Kraus, Peter; and Marhold, Albrecht, 4,318,919, Cl. 424-278.000.

Marine Moisture Control Company, Inc.: *See*—
Gravert, William H., 4,318,227, Cl. 33-126.500.

Marko Materials, Inc.: *See*—
Ray, Ranjan; Polk, Donald E.; and Giessen, Bill C., 4,318,733, Cl. 75-0.5BA.

Markow, Edward G., to Grumman Aerospace Corporation. Banded tire load enhancement system. 4,318,434, Cl. 152-156.000.

Marks, Robert T., to Ranco Incorporated. Refrigerant flow reversing valve. 4,318,425, Cl. 137-625.430.

Marquart, Gordon L.: *See*—
Wetrich, Peter D.; Marquart, Gordon L.; Huckler, Volker D.; and Benedek, Vasile A., 4,318,305, Cl. 74-339.000.

Mars, Incorporated: *See*—
Henville, Michael I., 4,318,464, Cl. 194-97.00R.

Marshall, James J., to Lifeline Products, Inc. Method of producing low calorie alcoholic beverage with starch-degrading enzymes derived from *Cladosporium resinae*. 4,318,927, Cl. 426-11.000.

Marshall, James J., to Lifeline Products, Inc. Starch-degrading enzymes from *Cladosporium resinae*. 4,318,989, Cl. 435-205.000.

Martel, Michel: *See*—
Gouttebessis, Jacques; and Martel, Michel, 4,318,429, Cl. 141-1.000.

Martin, Emma L.; and Martin, John G. Lawn refuse bag positioner. 4,318,521, Cl. 248-99.000.

Martin, Jerry R.; Tadanier, John S.; and Collum, Paulette, to Abbott Laboratories. 2-O-Substituted sulfonyl derivatives of fortimicin B. 4,319,022, Cl. 536-17.00R.

Martin, John G.: *See*—
Martin, Emma L.; and Martin, John G., 4,318,521, Cl. 248-99.000.

Martin Marietta Corporation: *See*—
Varsos, Spyros G., 4,319,087, Cl. 179-1.50R.

Martin, Michael C.; and Summers, Ian R., to National Research Development Corporation. Sound level monitoring apparatus. 4,319,081, Cl. 179-1.0MN.

Martin-Smith, Michael: *See*—
Clitherow, John W.; Bradshaw, John; Mackinnon, John W. M.; Price, Barry J.; Martin-Smith, Michael; and Judd, Duncan B., 4,318,913, Cl. 424-267.000.

Martin, William A., to Eastman Kodak Company. Film magazine. 4,318,601, Cl. 354-86.000.

Martinez, Manuel T. Tension adjustment system of the paper belt on feeding units of paper manufacturing machines. 4,318,513, Cl. 242-75.530.

Maruyama, Masaki; and Nakamura, Kohei, to Hochiki Corporation. Fire sensing system protected from noise factors. 4,319,231, Cl. 340-587.000.

Marze, Xavier; and Minfray, Michel, to Rhone-Poulenc Industries. Polyether admixture and semi-permeable membranes comprised thereof. 4,319,008, Cl. 525-523.000.

Maschinenfabrik Augsburg-Nuernberg A.G.: *See*—
Kleim, Karl-Heinz, 4,318,345, Cl. 105-15.000.

Masco Corporation: *See*—
Pinkston, David L., 4,318,194, Cl. 4-366.000.

Masi, James V.: *See*—
Barnett, Allen M.; Baron, Bill N.; Masi, James V.; and Russell, T. W. Fraser, 4,318,938, Cl. 427-75.000.

Massachusetts Institute of Technology: *See*—
Tepic, Slobodan, 4,318,191, Cl. 3-1.913.

Massey, William A.: *See*—
Keeney, Marvin F., Jr.; and Massey, William A., 4,319,315, Cl. 363-22.000.

Massingill, John L., Jr.: *See*—
Friedli, Hans R.; Nelson, Donald L.; and Massingill, John L., Jr., 4,319,009, Cl. 526-62.000.

Massonnet, Albert: *See*—
Decroix, Victor; Funk, Burkhard; Massonnet, Albert; Weber, Hansjorg; and Zbinden, Alain, 4,319,104, Cl. 200-147.00R.

Masumoto, Tsuyoshi; Inoue, Akihisa; and Arakawa, Shunsuke, to Shin-Gijutsu Kaihatsu Jigyodan. Amorphous carbon alloys and articles manufactured from said alloys. 4,318,738, Cl. 75-122.000.

Masuyama, Takayuki: *See*—
Kurobe, Moriji; Tsuji, Ryusuke; Imao, Eiichi; Masuyama, Takayuki; Nagata, Eizi; and Kamada, Kazunori, 4,319,016, Cl. 528-127.000.

Matburn (Holdings) Limited: *See*—
McLeod, Patrick H., 4,318,406, Cl. 128-283.000.

Mathieu, Raymond J.: *See*—
Voorhees, John E.; and Mathieu, Raymond J., 4,318,323, Cl. 83-168.000.

Matson, Stephen L.: *See*—
Kimura, Shiro G.; Ward, William J., III; and Matson, Stephen L., 4,318,714, Cl. 55-16.000.

Matsue, Shinozaki: *See*—
Hiroshi, Matsushita; and Matsue, Shinozaki, 4,318,417, Cl. 131-274.000.

Matsui, Kenichi: *See*—
Hiroshima, Tatsuo; Sakamoto, Takahide; Matsui, Kenichi; and Ohgaki, Ichiroh, 4,318,439, Cl. 164-154.000.

Matsumoto, Genya; Sakai, Munetaka; Nakata, Shigeki; and Kawabata, Toshio, to Sumitomo Chemical Company, Limited. Process for recovering useful components from waste gas of methionine synthesis. 4,319,044, Cl. 562-559.000.

Matsumoto, Hiromitsu, to Yamaha Hatsudoki Kabushiki Kaisha. Intake system for multi-cylinder internal combustion engine. 4,318,380, Cl. 123-432.000.

Matsumura, Eiichi, to Nippon Electric Co., Ltd. Demodulator for amplitude modulated signal having high input impedance. 4,319,195, Cl. 329-101.000.

Matsumura, Isao, to Canon Kabushiki Kaisha. Optical system with an afocal focusing group. 4,318,585, Cl. 350-46.000.

Matsuo, Tamotsu; Ide, Susumu; and Irie, Hiroyuki, to Matsushita Electric Industrial Co., Ltd. Brightness adjusting circuit of liquid crystal matrix panel for picture display. 4,319,237, Cl. 340-713.000.

Matsuoka, Michihiro; and Ohba, Yasumasa, to Kokusan Denki Co., Ltd. Device for electrically detecting a liquid level. 4,319,233, Cl. 340-622.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Matsuo, Tamotsu; Ide, Susumu; and Irie, Hiroyuki, 4,319,237, Cl. 340-713.000.
Ohsima, Masaaki; and Akasaki, Isamu, 4,319,259, Cl. 357-17.000.

Matsushita Seiko Co., Ltd.: *See*—
Kobayashi, Takashi, 4,318,397, Cl. 128-200.210.

Matsutani, Shigeru: *See*—
Hirai, Kentaro; Matsutani, Shigeru; Ishiba, Teruyuki; Makino, Itsuo; Doteuchi, Masami; and Otani, Koichi, 4,318,858, Cl. 260-347.200.

Matsuzawa, Yoshio: *See*—
Daitoku, Koichi; Sakamoto, Hatsuo; Terui, Nobuhiko; Hozumi, Toshiaki; Sekine, Yoshio; Hyodo, Yukio; Ichikawa, Masanori; Wada, Masamichi; Kudo, Tsuyoshi; Nakamura, Manabu; Nakanishi, Nobuaki; Komai, Takeo; and Matsuzawa, Yoshio, 4,318,603, Cl. 354-214.000.

Maughmer, Robert W., to Litton Systems, Inc. Low cost self aligning strapdown attitude and heading reference system. 4,318,300, Cl. 73-178.00R.

Mawhinney, Daniel D., to RCA Corporation. Doppler signal processing apparatus. 4,319,245, Cl. 343-8.000.

Maxson, Orwin G.: *See*—
Peterson, Marvin L.; Putnik, Charles F.; and Maxson, Orwin G., 4,318,787, Cl. 204-147.000.

May, James A., Jr.: *See*—
Lowery, Kirby, Jr.; Knight, George W.; and May, James A., Jr., 4,319,011, Cl. 526-137.000.

Mayala, Arne H.: *See*—
Fleisher, Larry D.; and Mayala, Arne H., 4,318,580, Cl. 339-98.000.

Mayer, Alfred, to RCA Corporation. Wettable carrier in gas drying system for wafers. 4,318,749, Cl. 134-25.400.

Mayo, Howard A., Jr., to Allis-Chalmers Corporation. Power generation unit for spillway gate structures. 4,319,142, Cl. 290-52.000.

Mayo, Randall D.: *See*—
Cook, Paul A.; Mayo, Randall D.; and Raider, Jerry W., 4,319,174, Cl. 318-696.000.

Mayol, Robert F., to Mead Johnson & Company. Encainide assay method. 4,318,899, Cl. 424-1.000.

Mazac, Karel: *See*—
Pache, Norbert; Ganowski, Franz-Josef; and Mazac, Karel, 4,319,123, Cl. 219-123.000.

Mazzorana, Alfred B., to Societe de Paris et du Rhone. Starter-motor assembly. 4,319,139, Cl. 290-38.00C.

McAleer, William J.: *See*—
Hurni, William M.; and McAleer, William J., 4,319,271, Cl. 358-107.000.

McCarthy, Dennis J., to D & H Manufacturers, Inc. Adjustable end bracket. 4,318,487, Cl. 211-134.000.

McCombs, Frank P.; and Roberts, Michael G., to Owens-Corning Fiberglas Corporation. Glass fiber size composition comprising maleic anhydride graft copolymer. 4,318,960, Cl. 428-378.000.

McCreery, James F., to Kennametal Inc. Cutting insert. 4,318,645, Cl. 407-114.000.

McDonnell Douglas Corporation: *See*—
Meyer, Michael C.; Woods, Leodis V.; Underwood, James J.; Wilkinson, Ralph; and Stratman, Victoria, 4,318,994, Cl. 435-301.000.
Richardson, Ralph J.; and Lilenfeld, Harvey V., 4,318,895, Cl. 423-579.000.

McFarland, James D., to Edelbrock Corp. Manifold for internal combustion engines having independent runners, a two-plane layout, and independent plenums. 4,318,371, Cl. 123-52.00M.

McGeary, Thomas C.; and Scott, Angus A. Score record processing system. 4,319,131, Cl. 235-375.000.

McHenry Systems, Inc.: *See*—
Jenkinson, Frederic W., 4,318,225, Cl. 33-1.0PT.

McIntosh, Robert G.; and McKinney, Gary S. Method and apparatus for forming manhole bases. 4,318,880, Cl. 264-267.000.

McIntyre, Raeburn C. Tilting deck vehicle. 4,318,658, Cl. 414-480.000.

McKenzie, Walter L.: *See*—
Kligman, Albert M.; McKenzie, Walter L.; and Ciesla, Peter F., 4,318,907, Cl. 424-220.000.

McKinney, Gary S.: *See*—
McIntosh, Robert G.; and McKinney, Gary S., 4,318,880, Cl. 264-267.000.

McLaughlin, Ivan P.: *See*—
Barker, John C.; and McLaughlin, Ivan P., 4,318,952, Cl. 428-172.000.

McLeod, Patrick H., to Matburn (Holdings) Limited. Colostomy or ileastomy applicance. 4,318,406, Cl. 128-283.000.

McMullen, Alice K.: *See*—
Anderson, Robert W.; Gee, May L.; and McMullen, Alice K., 4,319,336, Cl. 364-900.000.

McVicker, Gary B., to Exxon Research & Engineering Co. Carbonylation catalysts. 4,318,826, Cl. 252-431.00P.

Mead Corporation, The: *See*—
Clement, Joseph, 4,318,485, Cl. 211-49.00D.
Wood, Prentice J.; and Watkins, Richard K., 4,318,476, Cl. 206-459.000.

Mead Johnson & Company: *See*—
Mayol, Robert F., 4,318,899, Cl. 424-1.000.

Meador, Richard A.; and Nussbaum, Theodore W., to Texaco Inc. Dielectric well logging with radially oriented coils. 4,319,191, Cl. 324-341.000.

Medical Engineering Corporation: *See*—
Finney, Roy P., 4,318,396, Cl. 128-79.000.

Medical Research Associates, Ltd. 2: *See*—
Oosten, Roger L., 4,318,409, Cl. 128-303.140.

Medimetric Company: *See*—
Mount, Bruce E., 4,319,241, Cl. 340-870.380.

Mehnert, Walter, to Zellweger Uster Ltd. Method and apparatus for space monitoring by means of pulsed directional beam. 4,319,332, Cl. 364-516.000.

Meldrum, James S., to Burroughs Corporation. Printing circuit board mounting systems. 4,319,305, Cl. 361-415.000.

Melikian, Robert B. Cap for dispensing predetermined quantities of flowable material. 4,318,500, Cl. 222-425.000.

Mentz, H. C. Mounting ring construction for surface aerator apparatus. 4,318,871, Cl. 261-120.000.

Mera, Takashi: *See*—
Ikeda, Toshio; Tsukada, Ziro; and Mera, Takashi, 4,319,216, Cl. 338-61.000.

Merck & Co., Inc.: *See*—
Albers-Schonberg, George, 4,319,039, Cl. 560-256.000.
Christensen, Burton G.; and Ratcliffe, Ronald W., 4,318,912, Cl. 424-263.000.
Hurni, William M.; and McAleer, William J., 4,319,271, Cl. 358-107.000.

Mergenthaler, Robert: *See*—
Leiber, Heinz; and Mergenthaler, Robert, 4,318,272, Cl. 60-553.000.

Merger, Franz; and Towae, Friedrich, to BASF Aktiengesellschaft. Process for recycling noble metal catalysts used for the manufacture of aromatic urethanes. 4,319,035, Cl. 560-25.000.

Meri, Kalju, to Dictaphone Corporation. Dial pulse restorer. 4,319,091, Cl. 179-16.0EA.

Metallgesellschaft Aktiengesellschaft: *See*—
Albrecht, Johannes-Josef; Rammler, Roland; and Hirsch, Martin, 4,318,798, Cl. 208-11.00R.
Doerges, Alexander; Kriebel, Manfred; and Schlauer, Johann, 4,318,716, Cl. 55-48.000.

Metropolitan Wire Corporation: *See*—
Friedman, Abraham; and Welsch, John H., 4,318,352, Cl. 108-111.000.

Meunier, Georges, to Tunzini Nessi Entreprises D'Equipements. Fluidizing grid. 4,318,229, Cl. 34-57.00B.

Meyer, Heinrich F.: *See*—
Zahn, Irwin; and Meyer, Heinrich F., 4,318,964, Cl. 428-572.000.

Meyer, Leonard S., to Victor United, Inc. Method and apparatus for sequentially forming a molded product. 4,318,762, Cl. 156-180.000.

Meyer, Michael C.; Woods, Leodis V.; Underwood, James J.; Wilkinson, Ralph; and Stratman, Victoria, to McDonnell Douglas Corporation. Enterobacteriaceae species biochemical test card. 4,318,994, Cl. 435-301.000.

Micafil Aktiengesellschaft: *See*—
Piur, Armin, 4,319,076, Cl. 174-178.000.

Michurov, Jury I.: *See*—
Styskin, Evgeny L.; Gurvich, Yakov A.; Kumok, Simona T.; Starikova, Olga F.; Rutman, Grigory I.; Michurov, Jury I.; Yanshevsky, Vladimir A.; Gusev, Vladimir K.; and Liakumovich, Alexandr G., 4,319,052, Cl. 568-727.000.

Microseal Corporation: *See*—
Anderson, Thomas P.; and Bramley, Richard G., 4,318,554, Cl. 283-7.000.

Midland-Ross Corporation: *See*—
Thome, William L.; and Schmall, Robert A., 4,318,534, Cl. 266-113.000.
Tulleners, Harry W., 4,319,164, Cl. 315-219.000.

Mila-de-la-Roca, Yolanda M.; Azuaje, Beltran V.; and Gil, Omar R., to Instituto Nacional de Higiene Rafael Rangel. Fermenter. 4,318,992, Cl. 435-291.000.

Miles, Brynley J.: *See*—
Thomson, Alan R.; Miles, Brynley J.; Caygill, John C.; and Moore, David J., 4,318,990, Cl. 435-219.000.

Miles Laboratories, Inc.: *See*—
Bauer, Robert; and Rapkin, Myron C., 4,318,985, Cl. 435-14.000.
Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,318,980, Cl. 435-7.000.
Burd, John F.; and Li, Thomas M., 4,318,981, Cl. 435-7.000.
Falb, Richard D.; Stiso, Sisto N.; Wang, Yung-Chyung; White, William I.; and White-Stevens, Rodric H., 4,318,709, Cl. 23-230.00R.
Hornby, William E.; and Morris, David L., 4,318,982, Cl. 435-7.000.
Hornby, William E.; and Morris, David L., 4,318,983, Cl. 435-7.000.
Magers, Thomas A.; and Tabb, David L., 4,318,984, Cl. 435-14.000.

Miller, Edwin K., to Sundstrand Corporation. Actuating mechanism for fluid pump inlet closure valve. 4,318,667, Cl. 415-121.00R.

Miller, Harry W., Jr., to Harry W. Miller, Jr. Corp. Method for debittering soybeans. 4,318,933, Cl. 426-431.000.

Miller, Robert J.: *See*—
Gangulee, Amitava; Ho, Paul S.; Howard, James K.; and Miller, Robert J., 4,319,264, Cl. 357-71.000.

Miller, Stanley F., to Quasar Microsystems, Inc. Telephone answering machine. 4,319,089, Cl. 179-6.060.

Minalga, Philip F.; and Salge, Edward A., to Singer Company, The. Data advancing arrangement in a sewing machine. 4,318,357, Cl. 112-158.00E.

Minerd, Timothy M., to Xerox Corporation. Exposure control for selective speed xerographic printing and the like. 4,319,285, Cl. 358-300.000.

Minfray, Michel: *See*—
Marze, Xavier; and Minfray, Michel, 4,319,008, Cl. 525-523.000.

Minnesota Mining and Manufacturing Company: *See*—
Fleisher, Larry D.; and Mayala, Arne H., 4,318,580, Cl. 339-98.000.
Schneider, John F., 4,318,490, Cl. 215-232.000.
Smith, George H., 4,318,766, Cl. 156-330.000.

Minolta Camera Kabushiki Kaisha: *See*—
Kobori, Toshio, 4,318,604, Cl. 354-288.000.
Ueda, Hiroshi; and Oyokota, Shigeru, 4,319,211, Cl. 335-229.000.
Yamanaka, Akira; and Imura, Toshinori, 4,318,602, Cl. 354-128.000.

Minoura, Kazuo; Kiyohara, Takehiko; and Uchiyama, Haruo, to Canon Kabushiki Kaisha. Two-dimensional scanning apparatus. 4,318,582, Cl. 350-6.600.

Minoura, Kazuo: *See*—
Goshima, Takeshi; and Minoura, Kazuo, 4,318,583, Cl. 350-6.600.

Mirman, Alfred H.: *See*—
Schiffmann, Robert F.; Mirman, Alfred H.; and Grillo, Richard J., 4,318,931, Cl. 426-243.000.

Mishima, Akio; Kondo, Hiroyuki; and Mukaizaka, Akira, to Toda Kogyo Corp. Process for preparing magnetic particles with metallic region therein, and magnetic particles prepared by the process. 4,318,735, Cl. 75-0.5BA.

Misumi, Teruyuki: *See*—
Yamamoto, Fumihiko; Katayose, Mitsuru; Tanaka, Kyugo; and Misumi, Teruyuki, 4,318,850, Cl. 260-152.000.

Mitchell, Richard F.: *See*—
Davis, Christopher K.; and Mitchell, Richard F., 4,319,222, Cl. 340-825.500.

Mitchell, W. Phillip. Readily collapsable portable lighting system having a simplified holder for color filters. 4,319,311, Cl. 362-250.000.

Mitsubishi Chemical Industries Limited: *See*—
Maki, Takao; and Murayama, Kenji, 4,319,054, Cl. 568-772.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Akamatsu, Masahiko, 4,319,176, Cl. 318-716.000.
Takano, Tadashi; Mizusawa, Motoo; Betsudan, Shinichi; and Sato, Shigeru, 4,319,250, Cl. 343-781.0CA.
Watanabe, Keiji; Saito, Masato; and Fukuyama, Keiji, 4,319,158, Cl. 313-346.00R.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Yoneoka, Mikio, 4,319,037, Cl. 560-239.000.

Mitsubishi Petrochemical Co., Ltd.: *See*—
Takashi, Masanori; and Yoshiyasu, Mitsuo, 4,318,950, Cl. 428-143.000.

Mitsui Toatsu Chemicals Incorporated: *See*—
Kurobe, Moriji; Tsuji, Ryusuke; Imao, Eiichi; Masuyama, Takayuki; Nagata, Eizi; and Kamada, Kazunori, 4,319,016, Cl. 528-127.000.
Miyata, Katsuharu; Hasegawa, Seiji; Aoki, Shinobu; and Hara, Isao, 4,319,018, Cl. 528-232.000.

Mitsuya, Eiji; Murakami, Shinichi; Mori, Katsumi; Kishimoto, Tomio; and Kamae, Takahiko, to Nippon Telegraph and Telephone Public Corporation. Picture coding and/or decoding equipment. 4,319,267, Cl. 358-75.000.

Miura, Kiyoshi: *See—*
Nishizawa, Masahiro; Miura, Kiyoshi; Yokomizo, Hiroshi; Sasaya, Osamu; Morishita, Hajime; and Uchino, Shoichi, 4,318,971, Cl. 430-28.000.

Miura, Takanori: *See—*
Suenobu, Koreyoshi; Kaku, Eizaburo; and Miura, Takanori, 4,319,051, Cl. 568-720.000.

Miyake, Toshihide, to Sharp Kabushiki Kaisha. Programmed shutter control circuit. 4,318,600, Cl. 354-51.000.

Miyamura, Tamio: *See—*
Fukushima, Toshitaka; Koyama, Kazumi; Ueno, Kouji; Miyamura, Tamio; and Kawabata, Yuichi, 4,319,341, Cl. 365-94.000.
Napiorkowski, John; Jones, Raymond D.; Fukushima, Toshitaka; Koyama, Kazumi; Ueno, Kouji; Miyamura, Tamio; and Kawabata, Yuichi, 4,319,300, Cl. 361-119.000.

Miyashiro, Takeshi: *See—*
Naka, Hiromitsu; Miyashiro, Takeshi; and Sugimoto, Yoshihide, 4,318,951, Cl. 428-167.000.

Miyashita, Kiyoshi: *See—*
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,318,611, Cl. 355-14.0SH.

Miyata, Katsuharu; Hasegawa, Seiji; Aoki, Shinobu; and Hara, Isao, to Mitsui Toatsu Chemicals, Inc. Process for producing polymethylene polyphenyl polycarbamates. 4,319,018, Cl. 528-232.000.

Miyoshi, Tadahiko: *See—*
Yamazaki, Takeo; and Miyoshi, Tadahiko, 4,319,215, Cl. 338-21.000.

Mizote, Masanori: *See—*
Morimoto, Yoshiro; Usui, Keizaburo; and Mizote, Masanori, 4,318,312, Cl. 74-866.000.

Mizusawa, Motoo: *See—*
Takano, Tadashi; Mizusawa, Motoo; Betsudan, Shinichi; and Sato, Shigeru, 4,319,250, Cl. 343-781.0CA.

Mobil Oil Corporation: *See—*
Godbey, John K.; and Ballard, Billy G., 4,318,298, Cl. 73-155.000.
Godbey, John K.; and Ballard, Billy G., 4,318,674, Cl. 417-36.000.
Huebner, Juergen, 4,318,817, Cl. 252-78.500.

Mobil Tyco Solar Energy Corporation: *See—*
Sachs, Emanual M., 4,318,769, Cl. 156-601.000.

Model A and Model T Motor Car Reproduction Corp., The: *See—*
Shay, Harry; Sanders, Daniel; Turner, Nelson R.; and Bienenstein, Charles, 4,318,551, Cl. 280-788.000.

Moellman, Emanuel E.; and Robertson, Jacqueline L., to United States of America, Agriculture. Laboratory pesticide spray chamber. 4,318,363, Cl. 118-699.000.

Moffett, Charles M. Fuel vaporizer. 4,318,384, Cl. 123-557.000.

Mollier, Jean H., to Compagnia Internationale pour l'Informatique. Method of and apparatus for testing a memory matrix control character. 4,319,355, Cl. 371-21.000.

Molls, Hans-Heinz; Schiwy, Willy; Hornle, Reinhold; and Nebeling, Reinhard, to Bayer Aktiengesellschaft. Process for the neutralization of basic reaction compositions. 4,318,848, Cl. 260-143.000.

Molter, Michael; Kloss, Gerhard; and Schickel, Eberhard, to Hoechst Aktiengesellschaft. Technetium-99m-labelled (2,4,5-trimethylacetanilido)-iminodiacetate for liver function diagnosis, chloroacetric acid (2,4,5-trimethylanilide), (2,4,5-trimethylacetanilido)-iminodiacetate, and process for their preparation. 4,318,898, Cl. 424-1.000.

Monahan, Daniel E. Reactor for generating granular metal hydride. 4,318,890, Cl. 422-233.000.

Mondel, Karl: *See—*
Seifert, Helmut; and Mondel, Karl, 4,318,552, Cl. 280-801.000.

Monley, Robert E.: *See—*
Glatthorn, Raymond H.; Monley, Robert E.; and Schneider, Urban A., 4,319,113, Cl. 219-60.200.

Monsanto Company: *See—*
Agrawal, Purushottam D.; and Mandell, John F., 4,318,882, Cl. 264-521.000.

Montealegre, James, to Champion International Corporation. Carton with cells and blank for forming same. 4,318,470, Cl. 206-180.000.

Montedison S.p.A.: *See—*
Pagani, Giorgio; and Socci, Fabrizio, 4,318,782, Cl. 203-12.000.

Monteillet, Denis, to Societe Anonyme de Recherches de Mecanique. Cable tension regulators. 4,318,308, Cl. 74-501.50R.

Moore, Arthur D.: *See—*
Stowell, Roger H.; Hirtle, Michael O.; Brown, Russell W.; and Moore, Arthur D., 4,318,245, Cl. 46-232.000.

Moore, Bernard C., to American Standard Inc. Apparatus for casting toilet tanks. 4,318,679, Cl. 425-348.00S.

Moore, Dana W.: *See—*
Johnson, Robert B.; Nibby, Chester M., Jr.; and Moore, Dana W., 4,319,324, Cl. 364-200.000.

Moore, David J.: *See—*
Thomson, Alan R.; Miles, Brynley J.; Caygill, John C.; and Moore, David J., 4,318,990, Cl. 435-219.000.

Moore, Edward B.: *See—*
Woerner, Lloyd M.; and Moore, Edward B., 4,318,942, Cl. 427-213.000.

Moore, James I.: *See—*
Larson, Frederick R.; Dangremond, Rodger L.; Reuschel, Donald L.; and Moore, James I., 4,318,682, Cl. 425-411.000.

Morf, Richard, to Zellweger Uster Ltd. Measuring funnel for determining the tension of slivers. 4,318,299, Cl. 73-160.000.

Morgan, Dennis W., to International Tools (1973) Limited. Injection molding apparatus for molding parts of thermosetting plastic material. 4,318,686, Cl. 425-543.000.

Mori, Katsumi: *See—*
Mitsuya, Eiji; Murakami, Shinichi; Mori, Katsumi; Kishimoto, Tomio; and Kamae, Takahiko, 4,319,267, Cl. 358-75.000.

Mori, Kogoro; Ohi, Hideo; and Yazawa, Chihiro. Aquatic organism inhibiting composition. 4,318,730, Cl. 71-67.000.

Mori, Masahiro: *See—*
Kajiura, Toshihiro; Oita, Norio; Mori, Masahiro; and Fukui, Yuichi, 4,319,269, Cl. 358-106.000.

Morikawa, Michio: *See—*
Hayashi, Torahiko; Morikawa, Michio; and Shibata, Sadao, 4,318,678, Cl. 425-301.000.

Morimoto, Yoshiro; Usui, Keizaburo; and Mizote, Masanori, to Nissan Motor Co., Ltd. Gearshift control system for automatic transmissions using air flow sensor. 4,318,312, Cl. 74-866.000.

Morin, Gerard, to Societe Anonyme D.B.A. Ball and socket articulated joint. 4,318,627, Cl. 403-133.000.

Morishita, Hajime: *See—*
Nishizawa, Masahiro; Miura, Kiyoshi; Yokomizo, Hiroshi; Sasaya, Osamu; Morishita, Hajime; and Uchino, Shoichi, 4,318,971, Cl. 430-28.000.

Morita, Keizo: *See—*
Ito, Susumu; Nagao, Morimasa; Toki, Kaoru; and Morita, Keizo, 4,319,188, Cl. 324-173.000.

Morita, Shuji: *See—*
Nakamura, Norihiko; Nakanishi, Kiyoshi; Itou, Kazuhiko; Baika, Toyokazu; and Morita, Shuji, 4,318,376, Cl. 123-260.000.

Morningstar, Marion G., to B. F. Goodrich Company, The. Suspension polymerization process for making vinyl resins for use in plastisol. 4,319,012, Cl. 526-202.000.

Morrett, Malcolm K.: *See—*
Drubeck, David S.; and Morrett, Malcolm K., 4,319,291, Cl. 360-92.000.

Morris, David L.: *See—*
Hornby, William E.; and Morris, David L., 4,318,982, Cl. 435-7.000.
Hornby, William E.; and Morris, David L., 4,318,983, Cl. 435-7.000.

Morris, Robert D.: *See—*
Specht, Theodore R.; and Morris, Robert D., 4,319,183, Cl. 323-337.000.

Morton, James F., to Phoenix Products Company, Inc. Light fixture with internal connection zone. 4,319,314, Cl. 362-432.000.

Mosher, Walter W., Jr.: *See—*
Charles, Stanley E.; Long, Donald A.; Katsenis, Peter G.; and Mosher, Walter W., Jr., 4,318,234, Cl. 40-21.00C.

Moss, David E.; Stone, Karl E.; Bright, Charles A., Jr.; and Rusch, Randy A., to General Motors Corporation. Method of making strain sensor in fragile web. 4,318,936, Cl. 427-38.000.

Motoori, Ryuzo, to Nippon Kogaku K.K. Motor control device. 4,319,171, Cl. 318-379.000.

Motorola, Inc.: *See—*
Baitcher, Neal L., 4,319,098, Cl. 179-180.000.
Jett, William B., Jr., 4,319,179, Cl. 323-281.000.
Wrathall, Robert S., 4,319,181, Cl. 323-315.000.

Motoyama, Kazuyasu; and Kato, Toshikazu, to Olympus Optical Co., Ltd. Cassette tape recorder. 4,319,295, Cl. 360-137.000.

Moulden, R. Edward, to Consan Pacific Incorporated. Antistatic equipment employing positive and negative ion sources. 4,319,302, Cl. 361-213.000.

Mount, Bruce E., to Medimetric Company. Telemetering system for operating room and the like. 4,319,241, Cl. 340-870.380.

Mowery, Frank D.: *See—*
Kochanski, Aloysius J.; Mowery, Frank D.; and Hire, Charles J., 4,318,673, Cl. 417-15.000.

MTS Systems Corporation: *See—*
Noha, Rick B.; Watts, David E.; and Gram, Martin M., 4,318,572, Cl. 308-2.00R.

Mueller, Bernd: *See—*
Vachenauer, Erwin; Wagner, Gerhard; and Mueller, Bernd, 4,319,243, Cl. 343-6.50R.

Mukaizaka, Akira: *See—*
Mishima, Akio; Kondo, Hiroyuki; and Mukaizaka, Akira, 4,318,735, Cl. 75-0.5BA.

Muldner, Lawrence C., to Fisons-Western Peat Moss, Ltd. Mat for growing lawns and other vegetation. 4,318,248, Cl. 47-56.000.

Muller, Friedhelm: *See—*
Lehmann, Wolfgang; Muller, Friedhelm; Cramn, Gunther; Hammerstrom, Knut; and Lobach, Wilfried, 4,319,019, Cl. 528-324.000.

Muller, Walter: *See—*
Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, 4,319,025, Cl. 542-415.000.

Mullins, Winston M.: *See—*
Siegel, Bart A.; Hughes, Hal S., Jr.; and Mullins, Winston M., 4,318,260, Cl. 52-407.000.

Munekata, Seiji: *See—*
Yamabe, Masaaki; Munekata, Seiji; and Kumai, Seisaku, 4,318,867, Cl. 260-544.00F.

Munk, Edmund, to Furnier-u. Sperrholzwerk, J. F. Werz, Jr. KG, Werzalit-Pressholzwerk. Stackable pallet with integrated stacking members. 4,318,351, Cl. 108-53.100.

Muntz Electronics, Inc.: *See—*
Hanpachern, Aran, 4,319,286, Cl. 360-33.000.

Murakami, Shinichi: *See*—
Mitsuya, Eiji; Murakami, Shinichi; Mori, Katsumi; Kishimoto, Tomio; and Kamae, Takahiko, 4,319,267, Cl. 358-75.000.
Murata Manufacturing Co., Ltd.: *See*—
Nishiyama, Hiroshi; Kato, Suehiro; and Nakamura, Takeshi, 4,318,796, Cl. 204-298.000.
Murayama, Kenji: *See*—
Maki, Takao; and Murayama, Kenji, 4,319,054, Cl. 568-772.000.
Murenbeeld, Karel: *See*—
Foster, Peter W.; Berry, Thomas; and Murenbeeld, Karel, 4,318,210, Cl. 28-246.000.
Murillo Araujo, Francisco J.; Lopez Calderon, Isabel; Lopez Diaz, Isabel; and Cerda Olmedo, Enrique. β-Carotene producing strains of the fungus phycomyces blakesleenus. 4,318,987, Cl. 435-172.000.
Muse, Herbert S.: *See*—
Curley, Edward; and Muse, Herbert S., 4,318,263, Cl. 53-116.000.
Musick, Charles R., to Combustion Engineering, Inc. Method and apparatus for controlling a nuclear reactor. 4,318,778, Cl. 376-216.000.
Musikas, Claude: *See*—
Bathellier, Andre; Germain, Michel; and Musikas, Claude, 4,318,893, Cl. 423-10.000.
Naganawa, Tatsuhiro; Yoshitoshi, Makoto; and Kato, Kunihiro, to Nippon Telegraph & Telephone Public Corporation. Three-terminal power supply circuit for telephone set. 4,319,094, Cl. 179-77.000.
Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Reference voltage-generating circuit. 4,319,180, Cl. 323-313.000.
Nagao, Morimasa: *See*—
Ito, Susumu; Nagao, Morimasa; Toki, Kaoru; and Morita, Keizo, 4,319,188, Cl. 324-173.000.
Nagao, Shoichi: *See*—
Fujimori, Hiroaki; and Nagao, Shoichi, 4,319,351, Cl. 368-187.000.
Nagata, Eizi: *See*—
Kurobe, Moriji; Tsuji, Ryusuke; Imao, Eiichi; Masuyama, Takayuki; Nagata, Eizi; and Kamada, Kazunori, 4,319,016, Cl. 528-127.000.
Nagata, Shoji: *See*—
Ohashi, Naohito; Nagata, Shoji; Ioshizumi, Kikuo; and Katsube, Junki, 4,319,040, Cl. 562-401.000.
Nagel, Hartmut; Zimmermann, Hans; and Pieper, Fritz, to Veb Kombinat Polygraph "Werner Lamberz" Leipzig. Devices for the lateral alignment of sheets. 4,318,541, Cl. 271-222.000.
Naka, Hiromitsu; Miyashiro, Takeshi; and Sugimoto, Yoshihide. Stair mat. 4,318,951, Cl. 428-167.000.
Nakagawa, Hideshi: *See*—
Tanabe, Takeshi; Nakagawa, Hideshi; and Fujihara, Takeshi, 4,319,110, Cl. 219-10.55B.
Nakai, Hideharu; Kai, Isao; and Yamamoto, Hirohito, to Omron Tateisi Electronics Co. Nebulization control system for a piezoelectric ultrasonic nebulizer. 4,319,155, Cl. 310-316.000.
Nakai, Yasuhide: *See*—
Kimura, Nobuo; Nakai, Yasuhide; and Nishimoto, Yoshiro, 4,319,270, Cl. 358-106.000.
Nakajima, Takato, to Kanetsu Kogyo Kabushiki Kaisha. Device for separating mixture. 4,318,804, Cl. 209-221.000.
Nakamura, Hideo; Takagi, Katsuaki; and Funabashi, Tsuneo, to Hitachi, Ltd. Signal converter utilizing two clock signals. 4,319,226, Cl. 340-347.0NT.
Nakamura, Kohei: *See*—
Maruyama, Masaki; and Nakamura, Kohei, 4,319,231, Cl. 340-587.000.
Nakamura, Manabu: *See*—
Daitoku, Koichi; Sakamoto, Hatsuo; Terui, Nobuhiko; Hozumi, Toshiaki; Sekine, Yoshio; Hyodo, Yukio; Ichikawa, Masanori; Wada, Masamichi; Kudo, Tsuyoshi; Nakamura, Manabu; Nakanishi, Nobuaki; Komai, Takeo; and Matsuzawa, Yoshio, 4,318,603, Cl. 354-214.000.
Nakamura, Masahiro: *See*—
Ohtake, Yukio; and Nakamura, Masahiro, 4,318,618, Cl. 356-435.000.
Nakamura, Norihiko; Nakanishi, Kiyoshi; Itou, Kazuhiko; Baika, Toyokazu; and Morita, Shuji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Combustion chamber of an internal combustion engine. 4,318,376, Cl. 123-260.000.
Nakamura, Rinzo, to Nippon Seiko Kabushiki Kaisha. Cylindrical roller bearing. 4,318,574, Cl. 308-216.000.
Nakamura, Takeshi: *See*—
Nishiyama, Hiroshi; Kato, Suehiro; and Nakamura, Takeshi, 4,318,796, Cl. 204-298.000.
Nakamura, Yasushi; Ohtombe, Ko; and Nishito, Akihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for identifying sheet-like printed matters. 4,319,137, Cl. 250-556.000.
Nakane, Hisashi: *See*—
Hijikata, Isamu; Uehara, Akira; and Nakane, Hisashi, 4,318,767, Cl. 156-345.000.
Nakanishi, Kiyoshi: *See*—
Nakamura, Norihiko; Nakanishi, Kiyoshi; Itou, Kazuhiko; Baika, Toyokazu; and Morita, Shuji, 4,318,376, Cl. 123-260.000.
Nakanishi, Mikimaro; and Tanimoto, Kiyoji, to Tomoe Technical Research Company. Butterfly valve. 4,318,422, Cl. 137-246.000.
Nakanishi, Nobuaki: *See*—
Daitoku, Koichi; Sakamoto, Hatsuo; Terui, Nobuhiko; Hozumi, Toshiaki; Sekine, Yoshio; Hyodo, Yukio; Ichikawa, Masanori; Wada, Masamichi; Kudo, Tsuyoshi; Nakamura, Manabu; Nakanishi, Nobuaki; Komai, Takeo; and Matsuzawa, Yoshio, 4,318,603, Cl. 354-214.000.
Nakata, Shigeki: *See*—
Matsumoto, Genya; Sakai, Munetaka; Nakata, Shigeki; and Kawabata, Toshio, 4,319,044, Cl. 562-559.000.
Nakayama, Masaharu: *See*—
Ohmura, Hiroshi; and Nakayama, Masaharu, 4,318,834, Cl. 524-457.000.
Nalco Chemical Company: *See*—
Friedrich, James F., 4,318,497, Cl. 222-83.000.
Napiorkowski, John; Jones, Raymond D.; Fukushima, Toshitaka; Koyama, Kazumi; Ueno, Kouji; Miyamura, Tamio; and Kawabata, Yuichi, to TII Industries, Inc.; and Fujitsu Limited. Surge arrester assembly. 4,319,300, Cl. 361-119.000.
National Distillers & Chemical Corp.: *See*—
Romano, Giuliano, 4,318,872, Cl. 261-140.00A.
National Research Development Corporation: *See*—
Higgins, Irving J.; and Hill, Hugh A. O., 4,318,784, Cl. 204-73.00R.
Kingsley, Stuart A., 4,319,186, Cl. 324-96.000.
Martin, Michael C.; and Summers, Ian R., 4,319,081, Cl. 179-1.0MN.
Richardson, Anthony C.; Praill, Perry F. G.; and Price, Robert G., 4,318,986, Cl. 435-18.000.
Nauheimer, James F.; and Julich, Gregory G., to Container Corporation of America. Garment hanger box. 4,318,472, Cl. 206-284.000.
Naumann, Klaus: *See*—
Fuchs, Rainer; Naumann, Klaus; Riebel, Hans-Jochem; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, 4,318,922, Cl. 424-304.000.
NCR Corporation: *See*—
Kocol, James E.; and Schuck, David B., 4,319,356, Cl. 371-38.000.
Nebbia, Luciano: *See*—
Lucchini, Paolo; and Nebbia, Luciano, 4,319,084, Cl. 179-1.0SM.
Nebeling, Reinhard: *See*—
Molls, Hans-Heinz; Schiwy, Willy; Hornle, Reinhold; and Nebeling, Reinhard, 4,318,848, Cl. 260-143.000.
Nedelec, Lucien; Pierdet, Andre; and Dumont, Claude, to Roussel Uclaf. Indolobenzoxazines. 4,318,910, Cl. 424-248.400.
Neeff, Rutger; Rolf, Meinhard; and Muller, Walter, to Bayer Aktiengesellschaft. Anthraquinone-azomethine compounds, processes for their preparation and processes for dyeing synthetic fibre materials and for pigmenting organic macromolecular substances. 4,319,025, Cl. 542-415.000.
Neiss, Earl J. Log rolling apparatus. 4,318,704, Cl. 493-307.000.
Nelson, Dana W.; and Kouse, Charles H., to Carrier Corporation. Torque control for a fluid operated motor. 4,318,334, Cl. 91-59.000.
Nelson, Donald A., to General Electric Co. Method of making a dynamoelectric machine stator assembly. 4,318,218, Cl. 29-596.000.
Nelson, Donald L.: *See*—
Friedli, Hans R.; Nelson, Donald L.; and Massingill, John L., Jr., 4,319,009, Cl. 526-62.000.
Nelson, Richard E.; and Starr, Thomas J. Toroidal pressure vessel. 4,318,491, Cl. 220-1.00B.
Nelson, Wilbert K. Burner structure for particulate fuels. 4,318,355, Cl. 110-104.00R.
Nelson, William T.: *See*—
Heckelsberg, Louis F.; Nelson, William T.; Schiff, Sidney; and Zuech, Ernest A., 4,319,064, Cl. 585-10.000.
Nestle Co., Inc., The: *See*—
Augeri, Joseph L., 4,318,235, Cl. 40-306.000.
Nestor Associates: *See*—
Elbaum, Charles; and Cooper, Leon N., 4,319,331, Cl. 364-515.000.
Nestor, John J.; Jones, Gordon H.; and Vickery, Brian H., to Syntex (U.S.A.) Inc. Nonapeptide and decapeptide agonists of luteinizing hormone releasing hormone containing heterocyclic amino acid residues. 4,318,905, Cl. 424-177.000.
Neumaier, Hubert: *See*—
Ohorodnik, Alexander; Neumaier, Hubert; and Gehrmann, Klaus, 4,318,865, Cl. 260-543.00P.
Neuzil, Richard W.: *See*—
Kulprathipanja, Santi; and Neuzil, Richard W., 4,319,058, Cl. 568-917.000.
New Century Products, Inc.: *See*—
Blount, George W., 4,318,213, Cl. 29-434.000.
Newbould, John; Cosentino, Angelo J.; and Wright, Paul E., to General Motors Corporation. Polyamide based thermoplastic body solder. 4,318,839, Cl. 524-538.000.
Nhinivaara, Juhani: *See*—
Kauppi, Markku; Nhinivaara, Juhani; Nurminen, Markku, deceased; and Nurminen, Marjatta, administrator, 4,319,116, Cl. 219-72.000.
Nibby, Chester M., Jr.: *See*—
Johnson, Robert B.; Nibby, Chester M., Jr.; and Moore, Dana W., 4,319,324, Cl. 364-200.000.
Nicholson, John E.; and Wilmarth, Paul C., to RCA Corporation. Institutional audio-visual system including a plural operating mode television receiver. 4,319,277, Cl. 358-165.000.
Nidola, Antonio: *See*—
Bianchi, Giuseppe; de Nora, Vittorio; Gallone, Patrizio; and Nidola, Antonio, 4,318,795, Cl. 204-290.00F.
Nielsen, Leif: *See*—
Huelle, Zbigniew R.; and Nielsen, Leif, 4,318,529, Cl. 251-11.000.
Nihon Nohyaku Co., Ltd.: *See*—
Kajioka, Mitsuru; Kurono, Hitoshi; Okawa, Katsumasa; and Harada, Tatsuo, 4,318,731, Cl. 71-92.000.
Nippon Electric Co., Ltd.: *See*—
Ito, Susumu; Nagao, Morimasa; Toki, Kaoru; and Morita, Keizo, 4,319,188, Cl. 324-173.000.

Matsumura, Eiichi, 4,319,195, Cl. 329-101.000.
Sakoe, Hiroaki, 4,319,221, Cl. 340-146.30Q.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Koyama, Tomoyuki;, 4,318,740, Cl. 75-125.000.
Nippon Kogaku K.K.: *See*—
Daitoku, Koichi; Sakamoto, Hatsuo; Terui, Nobuhiko; Hozumi, Toshiaki; Sekine, Yoshio; Hyodo, Yukio; Ichikawa, Masanori; Wada, Masamichi; Kudo, Tsuyoshi; Nakamura, Manabu; Nakanishi, Nobuaki; Komai, Takeo; and Matsuzawa, Yoshio, 4,318,603, Cl. 354-214.000.
Fukuhara, Toru; Ogasawara, Akira; and Kimura, Makoto, 4,318,598, Cl. 354-23.00D.
Kawahara, Atsushi; Sawada, Masahiro; and Fujii, Norio, 4,318,886, Cl. 422-68.000.
Motoori, Ryuzo, 4,319,171, Cl. 318-379.000.
Ogasawara, Akira; Utagawa, Ken; Hoshino, Kunihisa; and Shirasu, Hiroshi, 4,319,238, Cl. 340-753.000.
Nippon Oil and Fats Company Limited: *See*—
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Nakamura, Rinzo, 4,318,574, Cl. 308-216.000.
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Kuroki, Katsuro; Iwayama, Kenzo; and Sato, Takashi, 4,318,758, Cl. 148-111.000.
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Nippon Telegraph & Telephone Public Corp.: *See*—
Edahiro, Takao; Tanaka, Gotaro; Kuwahara, Toru; and Kyoto, Michihisa, 4,318,726, Cl. 65-18.200.
Mitsuya, Eiji; Murakami, Shinichi; Mori, Katsumi; Kishimoto, Tomio; and Kamae, Takahiko, 4,319,267, Cl. 358-75.000.
Naganawa, Tatsuhiro; Yoshitoshi, Makoto; and Kato, Kunihiro, 4,319,094, Cl. 179-77.000.
Takano, Tadashi; Mizusawa, Motoo; Betsudan, Shinichi; and Sato, Shigeru, 4,319,250, Cl. 343-781.0CA.
Yokoo, Kenta; Kishimoto, Tomio; and Sato, Yuichi, 4,319,078, Cl. 178-18.000.
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Nishiyama, Hiroshi; Kato, Suehiro; and Nakamura, Takeshi, to Murata Manufacturing Co., Ltd. Sputtering apparatus. 4,318,796, Cl. 204-298.000.
Nishizawa, Masahiro; Miura, Kiyoshi; Yokomizo, Hiroshi; Sasaya, Osamu; Morishita, Hajime; and Uchino, Shoichi, to Hitachi, Ltd. Method of forming fluorescent screen of color picture tube. 4,318,971, Cl. 430-28.000.
Nissan Motor Company Limited: *See*—
Higashiyama, Kazuhiro; and Hosaka, Akio, 4,319,327, Cl. 364-431.050.
Hirota, Yukitsugu; Kaneko, Yoichi; Sekine, Kenji; Endo, Akira; and Kimura, Katsuhiro, 4,319,244, Cl. 343-8.000.
Iritani, Hidenori; and Tomizawa, Yasumichi, 4,318,383, Cl. 123-520.000.
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Morimoto, Yoshiro; Usui, Keizaburo; and Mizote, Masanori, 4,318,312, Cl. 74-866.000.
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Noha, Rick B.; Watts, David E.; and Gram, Martin M., to MTS Systems Corporation. Tension-compression swivel joint with hydraulic force reaction. 4,318,572, Cl. 308-2.00R.
Nohira, Hidetaka; Yoshimura, Kunimasa; and Ugajin, Mitsuyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine equipped with a turbocharger. 4,318,273, Cl. 60-611.000.
Nollen, Klaus: *See*—
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Kohler, Klaus; Woditsch, Peter; Stutgens, Heribert; Bayer, Eckhard; Nollen, Klaus; and Sander, Hans, 4,318,844, Cl. 524-212.000.
Nomura, Masahide: *See*—
Sato, Yoshio; Kurihara, Nobuo; Nomura, Masahide; Kawano, Shigeyoshi; and Saito, Tadayoshi, 4,319,320, Cl. 364-165.000.
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Hansen, Bent B., 4,318,672, Cl. 416-224.000.
North American Philips Consumer Electronics Corp.: *See*—
Say, Donald L., 4,319,160, Cl. 313-458.000.
Northcutt, Michael E. Diet scale with weight progress indicator. 4,318,447, Cl. 177-25.000.
Northern Telecom, Inc.: *See*—
Haskins, Steve W., 4,319,107, Cl. 200-303.000.
Northern Telecom Limited: *See*—
Boccali, Filbert J.; Crompton, Eric J.; and Machan, Ivo, 4,319,193, Cl. 324-418.000.
Cogan, Fredrick T., 4,319,095, Cl. 179-103.000.
Thompson, James L. E., 4,319,086, Cl. 179-1.0HF.
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Nose, Kazumi: *See*—
Utsumi, Masatoki; Ohi, Nobuo; Kishiue, Yasuhiro; and Nose, Kazumi, 4,318,718, Cl. 55-121.000.
Nossem, Edward J., to RCA Corporation. Television signal with encoded synchronizing signals. 4,319,273, Cl. 358-120.000.
Nowak, Rudolf; Dahmen, Kurt; and Stockhausen, Dolf, to Chemische Fabrik. Process for improving the lightfastness of conventionally dyed leather. 4,318,705, Cl. 8-436.000.
Nowy, Gunther: *See*—
Wiezer, Hartmut; Pfahler, Gerhard; Haberlein, Harald; and Nowy, Gunther, 4,319,030, Cl. 546-19.000.
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Nurminen, Marjatta, administrator: *See*—
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Kauppi, Markku; Nhinivaara, Juhani; Nurminen, Markku, deceased; and Nurminen, Marjatta, administrator, 4,319,116, Cl. 219-72.000.
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Geluk, Ronald J., 4,319,274, Cl. 358-140.000.
Oberle, Ingrid; and Bahr, Jens, to Jenaer, Glaswerk, Schott & Gen. Angularly adaptable seal. 4,318,548, Cl. 277-207.00A.
Occella, Sergio; Arietti, Giulio; and Borello, Gianpiero, to Centro Ricerche Fiat S.p.A. Internal combustion engine with fuel injection. 4,318,377, Cl. 123-279.000.
Ocean Resources Engineering, Inc.: *See*—
Lunde, Peter A.; and Phillips, Preston S., 4,318,442, Cl. 166-357.000.
O'Dea, John A.: *See*—
Lawrence, William A.; and O'Dea, John A., 4,318,621, Cl. 366-41.000.
Oestreich, Ulrich: *See*—
Zeidler, Guenter; Oestreich, Ulrich; and Schoeber, Gernot, 4,318,588, Cl. 350-96.230.
Oetjen, Georg-Wilhelm; and Benthin, Frank, to Dragerwerk Aktiengesellschaft. Humidity exchanger for a breathing apparatus. 4,318,398, Cl. 128-201.130.
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Dow, John, Jr.; Oetting, William A.; Yessian, Richard J.; and Brady, Thomas J., 4,319,128, Cl. 235-61.0PD.
Office National d'Etudes et de Recherches Aerospatiales O.N.E.R.A.: *See*—
Bibring, Herve; Khan, Tasadduq; Rabinovitch, Maurice; Stohr, Jean-Francois; and Hauser, Jean-Michel, 4,318,756, Cl. 148-32.500.
Ogasawara, Akira; Utagawa, Ken; Hoshino, Kunihisa; and Shirasu, Hiroshi, to Nippon Kogaku K.K. Camera display device. 4,319,238, Cl. 340-753.000.
Ogasawara, Akira: *See*—
Fukuhara, Toru; Ogasawara, Akira; and Kimura, Makoto, 4,318,598, Cl. 354-23.00D.
Oger, Jacques F.; and Hauer, Jean-Claude, to Pont-A-Mousson S.A. Process and device for the assembly of voussoirs for tunnel linings. 4,318,637, Cl. 405-153.000.
Ogoshi, Toshiaki: *See*—
Sekiguchi, Shizuo; Tano, Tetsuo; Kitano, Kyozo; and Ogoshi, Toshiaki, 4,318,823, Cl. 252-353.000.
Ohashi, Naohito; Nagata, Shoji; Ioshizumi, Kikuo; and Katsube, Junki, to Sumitomo Chemical Company, Limited. Process for the production of optically active threo-3-(3,4-dihydroxyphenyl)serine. 4,319,040, Cl. 562-401.000.
Ohba, Yasumasa: *See*—
Matsuoka, Michihiro; and Ohba, Yasumasa, 4,319,233, Cl. 340-622.000.
Ohgaki, Ichiroh: *See*—
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Ohi, Hideo: *See*—
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Ohi, Nobuo: *See*—
Utsumi, Masatoki; Ohi, Nobuo; Kishiue, Yasuhiro; and Nose, Kazumi, 4,318,718, Cl. 55-121.000.
Ohmura, Hiroshi; and Nakayama, Masaharu, to Nippon Oil and Fats Company Limited. Method for producing an aqueous liquid dispersion of polymers. 4,318,834, Cl. 524-457.000.

Ohorodnik, Alexander; Neumaier, Hubert; and Gehrmann, Klaus, to Hoechst Aktiengesellschaft. Production of 2-chloroformylethylmethylphosphinic acid chlorides. 4,318,865, Cl. 260-543.00P.

Ohsima, Masaaki; and Akasaki, Isamu, to Matsushita Electric Industrial Co., Ltd. Electroluminescent element. 4,319,259, Cl. 357-17.000.

Ohtake Works Company, Ltd.: *See*—
Ohtake, Yukio; and Nakamura, Masahiro, 4,318,618, Cl. 356-435.000.

Ohtake, Yukio; and Nakamura, Masahiro, to Ohtake Works Company, Ltd. Apparatus for automatically measuring changing values of absorbance. 4,318,618, Cl. 356-435.000.

Ohtombe, Ko: *See*—
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Oita, Norio: *See*—
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Okamoto, Miyoshi; and Fushida, Mineto, to Toray Industries, Inc. Composite nap sheet and process for preparing the same. 4,318,949, Cl. 428-91.000.

Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, to Sanraku-Ocean Co., Ltd. Antibiotic PS-5 and derivatives having β-lactamase inhibitory activity and production thereof. 4,318,916, Cl. 424-274.000.

Okawa, Katsumasa: *See*—
Kajioka, Mitsuru; Kurono, Hitoshi; Okawa, Katsumasa; and Harada, Tatsuo, 4,318,731, Cl. 71-92.000.

Oki Electric Industry Co., Ltd.: *See*—
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Okitsu, Takumi: *See*—
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Okumura, Yasushi: *See*—
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Olson, George R.: *See*—
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Olson, John T.; and Westergaard, Robert K., to King-Seeley Thermos Co. Ice making machine. 4,318,278, Cl. 62-347.000.

Olson, Raymond G.: *See*—
Westphal, Frank C.; and Olson, Raymond G., 4,319,232, Cl. 340-604.000.

Olsson, Karl G.: *See*—
Larsson, Bertil S. W.; Bokfors, Stefan J. A.; and Olsson, Karl G., 4,318,643, Cl. 406-14.000.

Olympus Optical Co., Ltd.: *See*—
Motoyama, Kazuyasu; and Kato, Toshikazu, 4,319,295, Cl. 360-137.000.
Suzuki, Nobuyoshi, 4,318,884, Cl. 422-63.000.
Suzuki, Nobuyoshi; and Yoshinari, Shigeru, 4,318,885, Cl. 422-68.000.
Tawara, Ikuo, 4,318,395, Cl. 128-4.000.
Tomabechi, Hideo, 4,319,293, Cl. 360-105.000.
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,318,611, Cl. 355-14.0SH.

Omron Tateisi Electronics Co.: *See*—
Nakai, Hideharu; Kai, Isao; and Yamamoto, Hirohito, 4,319,155, Cl. 310-316.000.
Uchida, Yoritoshi, 4,319,326, Cl. 364-405.000.

Oosten, Roger L., to Medical Research Associates, Ltd. 2. Electrosurgical generator. 4,318,409, Cl. 128-303.140.

Orain, Michel A., to Glaenzer Spicer. Transmission for an automobile vehicle comprising two slidable homokinetic joints. 4,318,282, Cl. 64-21.000.

Orfield, Steven J., to Commercial Interiors, Inc. Method and apparatus for masking sound. 4,319,088, Cl. 179-1.50M.

Orlick, Charles A.; deButts, Edward H.; Allabashi, John C.; and Sweeney, Stanley E., to United States of America, Navy. Additives for suppressing the radar attenuation of rocket propellant exhaust plumes. 4,318,270, Cl. 60-219.000.

Orsen, Stefan, to Keuffel & Esser Company. DC Shift error correction for electro-optical measuring system. 4,318,617, Cl. 356-373.000.

Orsinger, Winston A.; and Fallos, George, to Bell & Howell Company. Envelope flap opener. 4,318,265, Cl. 53-492.000.

Ortho Diagnostics, Inc.: *See*—
Barry, Donald E.; and Lombardo, Igino, 4,318,482, Cl. 209-3.100.
Lombardo, Igino; and Hansen, W. Peter, 4,318,480, Cl. 209-3.100.
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Osburn, Carlton M.: *See*—
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Ovutime, Inc.: *See*—
Schuster, Samuel R.; Kopito, Louis; and Kosasky, Harold, 4,318,414, Cl. 128-759.000.

Owens-Corning Fiberglas Corporation: *See*—
Kim, Kwan Y.; and Pellegrin, Michael T., 4,318,724, Cl. 65-1.000.
McCombs, Frank P.; and Roberts, Michael G., 4,318,960, Cl. 428-378.000.
Phillips, John D., 4,318,725, Cl. 65-16.000.
Williamson, Michael, 4,319,068, Cl. 13-6.000.

Oyokota, Shigeru: *See*—
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Ozawa, Takashi; Takenouchi, Mutsuo; Sekimoto, Souichi; and Kikuchi, Yoshiki, to Fuji Xerox Co., Ltd. Portable copying machine. 4,319,283, Cl. 358-286.000.

Paananen, Eugene E.; Casper, Mark S.; and Peng, Chung H., to Burroughs Corporation. Constant spacing document feeder. 4,318,540, Cl. 271-4.000.

Pabst, Joanne K.: *See*—
Lang, Robert J.; and Pabst, Joanne K., 4,318,712, Cl. 48-202.000.

Pacansky, Thomas J.; Gruber, Robert J.; and Knapp, John F., to Xerox Corporation. Copolycarbonate materials for flash fusing toners. 4,318,974, Cl. 430-108.000.

Pache, Norbert; Ganowski, Franz-Josef; and Mazac, Karel, to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. Method of controlling a magnetically guided welding arc. 4,319,123, Cl. 219-123.000.

Pacific Roller Die Co., Inc.: *See*—
Davis, Paul K., 4,318,320, Cl. 83-56.000.

Paessler, Ernst-Robert: *See*—
Tappeiner, Hermann; Paessler, Ernst-Robert; Smutny, Kurt; and Krugel, Karl-Heinz, 4,319,224, Cl. 340-310.00R.

Pagani, Giorgio; and Socci, Fabrizio, to Montedison S.p.A. Process for distilling ammoniacal solutions. 4,318,782, Cl. 203-12.000.

Palmisano, John J.: *See*—
Magers, Wallace F.; and Palmisano, John J., 4,318,498, Cl. 222-153.000.

Panke, Gunter: *See*—
Gerking, Luder; and Panke, Gunter, 4,318,676, Cl. 425-72.00S.

Papp, Alan M.: *See*—
Carroll, Richard R.; and Papp, Alan M., 4,318,665, Cl. 414-728.000.

Pappas, Dennis G.; Baum, Matthew C.; Small, Samuel N.; Adams, Robert T.; and Freedman, Robert P., to Pappas, Dennis G. Alarm system for monitoring pressurized vehicular tires. 4,319,220, Cl. 340-58.000.

Parker, David S.; Shaw, Stephen R.; and Hudson, Robert, to Coal Industry (Patents) Limited. Sampling equipment for sedimentation rate measuring. 4,318,296, Cl. 73-61.400.

Parsons, James D.; and Wike, Paul S., to Union Tank Car Company. Railroad tank car. 4,318,348, Cl. 105-358.000.

Paschke, Ralph W. Demand operated power management drive system. 4,319,140, Cl. 290-45.000.

Pask, George, to Rolls-Royce Limited. Cooled shroud for a gas turbine engine. 4,318,666, Cl. 415-116.000.

Passavant-Werke Michelbacher Hutte: *See*—
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Pastor, Stephen D.: *See*—
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Pasynkov, Vladimir A.: *See*—
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Patel, Natu R.: *See*—
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Patrick, John P.; and Goodman, Robert B., to United Technologies Corporation. Fluid temperature control system. 4,318,509, Cl. 236-87.000.

Pavlova, Antonina I.: *See*—
Kulakov, Valery V.; Judin, Valentin P.; Pavlova, Antonina I.; Zlatkis, Anatoly M.; Bagrov, Georgy N.; Zverev, Ivan I.; Khazanov, Iosif I.; Suvorov, Alexei V.; Bobrinsky, Alexei A.; and Pasynkov, Vladimir A., 4,318,955, Cl. 428-235.000.

Pavone, Dallas. Decorative simulated stained glass light transmissive mosaic panels. 4,318,946, Cl. 428-34.000.

Payne, John M. Portable electrostatic photocopier. 4,318,608, Cl. 355-3.0CH.

PCUK Produits Chimiques Ugine Kuhlmann: *See*—
Cabane, Bruno; and Vergnault, Joel, 4,318,988, Cl. 435-176.000.

Peacher, Stanley E.: *See*—
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Peascoe, Warren J.; White, Woodrow W.; and Somma, Linda E., to Uniroyal, Inc. Acid stable surfactant. 4,319,014, Cl. 526-287.000.

Peehs, Martin; and Petri, Werner, to Kraftwerk Union Aktiengesellschaft. Fuel assembly storage capsule for storing spent fuel assemblies. 4,318,492, Cl. 220-228.000.

Peery, John R.; Carpenter, Peter F.; and Griesinger, William K., to Alza Corporation. Medical infusor. 4,318,400, Cl. 128-214.00F.

Peeters, Hermann; Prange, Uwe; and Vogt, Wilhelm, to Dynamit Nobel Aktiengesellschaft. Method of preparing β-alkoxyacrlonitriles. 4,319,024, Cl. 542-413.000.

Peled, Emanuel; and Lombardi, Anthony, to GTE Laboratories Incorporated. Electrochemical cell. 4,318,969, Cl. 429-105.000.

Pellegrin, Michael T.: *See—*
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Pellegrini, John P., Jr.: *See—*
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Pemco-Kalamazoo, Inc.: *See—*
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Pentz, William J.: *See—*
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PepsiCo, Inc.: *See—*
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Perisic, Zoran. Stand for photographic apparatus. 4,318,605, Cl. 354-293.000.
Perkin-Elmer Corporation, The: *See—*
Chamran, Morteza M.; Scott, Larkin B.; and Williams, Paul B., 4,318,616, Cl. 356-332.000.
Permacel: *See—*
Korpman, Ralf, 4,318,408, Cl. 128-287.000.
Perman, Gifford T., to General Electric Company. Apparatus for making rechargeable electrodes for electrochemical cells. 4,318,430, Cl. 141-32.000.
Perryman, Raymond A. G.: *See—*
Farrer, Michael; and Perryman, Raymond A. G., 4,319,316, Cl. 363-41.000.
Peterson, Marvin L.; Putnik, Charles F.; and Maxson, Orwin G., to Conoco Inc. Sacrificial anode composition in cathodic protection process. 4,318,787, Cl. 204-147.000.
Petri, Werner: *See—*
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Pfahler, Gerhard: *See—*
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Pfeiffer, Ronald E.; and Peacher, Stanley E., to American Cyanamid Company. Spinnerette plate having multiple capillaries per counterbore for melt spinning fusion melts of acrylonitrile polymer and water. 4,318,680, Cl. 425-382.200.
Philip Morris, Incorporated: *See—*
Sanders, Edward B.; and Houminer, Yoram, 4,318,418, Cl. 131-278.000.
Phillips, Gerald: *See—*
Goldman, Jerome N.; Goldman, Marvin A.; and Phillips, Gerald, 4,318,945, Cl. 428-15.000.
Phillips, John D., to Owens-Corning Fiberglas Corporation. Apparatus for discharging a flow of gases. 4,318,725, Cl. 65-16.000.
Phillips, Jonathan W., Jr.; Bailey, Ted E., Jr.; and Bailey, C. L., Jr. Front loader for revolvers. 4,318,239, Cl. 42-89.000.
Phillips Petroleum Co.: *See—*
Furr, Danny L., 4,319,330, Cl. 364-501.000.
Heckelsberg, Louis F.; Nelson, William T.; Schiff, Sidney; and Zuech, Ernest A., 4,319,064, Cl. 585-10.000.
Richards, Frank P.; and Taylor, Raymond C., 4,318,703, Cl. 493-149.000.
Phillips, Preston S.: *See—*
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Phoenix Products Company, Inc.: *See—*
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Piatt, David M., to United States of America, Army. Flexible, high contrast, non-glare, polarizing filter for an illuminated switch assembly. 4,318,958, Cl. 428-332.000.
Pieper, Fritz: *See—*
Nagel, Hartmut; Zimmermann, Hans; and Pieper, Fritz, 4,318,541, Cl. 271-222.000.
Pierdet, Andre: *See—*
Nedelec, Lucien; Pierdet, Andre; and Dumont, Claude, 4,318,910, Cl. 424-248.400.
Pietsch, Erich; and Simeth, Claus, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Ink fountain for printing press. 4,318,341, Cl. 101-365.000.
Pietsch, Tibor. Continuous cellular glass manufacturing method. 4,318,727, Cl. 65-22.000.
Piget, Maurice. Protective encasement for machine tools. 4,319,103, Cl. 200-61.620.
Pilipski, Mark, to Sturman, Martin F.; Ebert, Michael; and Pilipski, Mark. Conversion of cellulose into charcoal. 4,318,710, Cl. 44-1.00F.
Pin-Houng, Lin. Rail track chasing toys. 4,318,242, Cl. 46-44.000.
Pinkston, David L., to Masco Corporation. Water closet diverter valve. 4,318,194, Cl. 4-366.000.
Pinsler, Heinz W.: *See—*
Brown, George A.; Relyea, Lloyd A.; Scharfe, Merlin E.; and Pinsler, Heinz W., 4,318,973, Cl. 430-31.000.
PIRELLI/FURLANIS Applicasioni Idrauliche-agricole: *See—*
Borca, Bruno, 4,318,634, Cl. 405-115.000.
Pittway Corporation: *See—*
Hackett, Kenneth R., 4,319,349, Cl. 367-94.000.
Piur, Armin, to Micafil Aktiengesellschaft. Electrically insulative hollow-profile structural part with high-tension attaching elements and method of constructing same. 4,319,076, Cl. 174-178.000.
Pletcher, Raymond E. Tank for containing large volumes of fluids. 4,318,549, Cl. 280-5.00C.
Pneumafil Corporation: *See—*
Barr, Harry S., 4,318,721, Cl. 55-337.000.
Polk, Donald E.: *See—*
Ray, Ranjan; Polk, Donald E.; and Giessen, Bill C., 4,318,733, Cl. 75-0.5BA.
Polony, Rudolf; Reinert, Gerhard; Holzle, Gerd; Pugin, Andre; and Vonderwahl, Rodolphe, to Ciba-Geigy Corporation. Process for combating micro-organisms, and novel phthalocyanine compounds. 4,318,883, Cl. 422-22.000.
Pont-A-Mousson S.A.: *See—*
Oger, Jacques F.; and Hauer, Jean-Claude, 4,318,637, Cl. 405-153.000.
Pope, Peter J.; and Willis-Owen, Richard B., to Duracell International Inc. Synchronous arrangement and method for heat treating workpieces. 4,319,122, Cl. 219-121.0LC.
Port, Walter. Apparatus for maintaining tension on a tension cable. 4,318,533, Cl. 254-273.000.
Portage Electric Products, Inc.: *See—*
Givler, Omar, 4,319,214, Cl. 337-343.000.
Porter, David R., to Boeing Company, The. Method of bonding an array of optical fibers. 4,318,873, Cl. 264-1.500.
Portz, Willi: *See—*
Braun, Albert; Portz, Willi; and Strauss, Georg, 4,318,822, Cl. 252-189.000.
Post, Martin F. M.: *See—*
Van Grinsven, Petrus F. A.; and Post, Martin F. M., 4,318,802, Cl. 208-245.000.
Post Office: *See—*
Garwood, Gerald J.; and Swenson, Evelyn M., 4,319,090, Cl. 179-8.00A.
Powell Corporation: *See—*
Powell, Henry J.; and Hoyle, Albert G., 4,318,774, Cl. 162-129.000.
Powell, Henry J.; and Hoyle, Albert G., to Powell Corporation. Composite nonwoven web. 4,318,774, Cl. 162-129.000.
Powell Manufacturing Company, Inc.: *See—*
Wilson, Robert W., 4,318,560, Cl. 294-5.500.
Powell, Robert W., to Honeywell Inc. Programmable digital memory circuit. 4,319,343, Cl. 365-189.000.
PPG Industries, Inc.: *See—*
Blasko, John E.; Boberski, William G.; and Seiner, Jerome A., 4,318,743, Cl. 106-84.000.
Claassen, George R., 4,318,728, Cl. 65-106.000.
Praill, Perry F. G.: *See—*
Richardson, Anthony C.; Praill, Perry F. G.; and Price, Robert G., 4,318,986, Cl. 435-18.000.
Prange, Uwe: *See—*
Peeters, Hermann; Prange, Uwe; and Vogt, Wilhelm, 4,319,024, Cl. 542-413.000.
Precision Dynamics Corporation: *See—*
Charles, Stanley E.; Long, Donald A.; Katsenis, Peter G.; and Mosher, Walter W., Jr., 4,318,234, Cl. 40-21.00C.
Preh Elektrofeinmechanische Werke: *See—*
Ambros, Peter; and Gatzke, Erich, 4,319,217, Cl. 338-308.000.
President and Fellows of Harvard College: *See—*
Justice, Richard E.; Grindlinger, Gene A.; and Hechtman, Herbert B., 4,318,301, Cl. 73-432.00R.
Zimmerman, Clarence E., 4,318,401, Cl. 128-214.00R.
Prestileo, Vincenzo: *See—*
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Price, Barry J.: *See—*
Clitherow, John W.; Bradshaw, John; Mackinnon, John W. M.; Price, Barry J.; Martin-Smith, Michael; and Judd, Duncan B., 4,318,913, Cl. 424-267.000.
Price, Charles D. Paddle wheel operated watercraft. 4,318,700, Cl. 440-26.000.
Price, Raymond M.; and Ward, John S., to United States of America, Navy. Spinning tubular projectile combustible sabot. 4,318,344, Cl. 102-520.000.
Price, Robert G.: *See—*
Richardson, Anthony C.; Praill, Perry F. G.; and Price, Robert G., 4,318,986, Cl. 435-18.000.
Prince, Fred J. Infra-red radiant heater system. 4,319,125, Cl. 219-347.000.
Princeton Organics Incorporated: *See—*
Magder, Jules, 4,318,996, Cl. 501-84.000.
Procter & Gamble Company, The: *See—*
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Prohaska, Hans: *See—*
Bauer, Kurt; Dorr, Wilhelm; Kohler, Alfred; Krizek, Oldrich; and Prohaska, Hans, 4,318,200, Cl. 15-250.320.
Proli, Norbert; Bertz, Siegfried; and Grabener, Karl-Heinz, to Kraftwerk Union Aktiengesellschaft. Measuring lance for boiling-water nuclear reactors. 4,318,776, Cl. 376-254.000.
Promersberger, Jon M.; and Steinberg, Richard W., to Vibra-King, Inc. Cable detensioning apparatus. 4,318,638, Cl. 405-177.000.
Pryor, Robert F.: *See—*
Brannan, Robert C.; Fogoros, Robert J.; Headrick, Michael R.; Krumins, Ainis; and Pryor, Robert F., 4,318,612, Cl. 355-14.0FU.
Puckett, Nathan J. Permanent wave maintaining apparatus. 4,318,419, Cl. 132-40.000.

Pugin, Andre: *See*—
Polony, Rudolf; Reinert, Gerhard; Holzle, Gerd; Pugin, Andre; and Vonderwahl, Rodolphe, 4,318,883, Cl. 422-22.000.

Pukita, Paul M.: *See*—
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Pullman Incorporated: *See*—
Galasan, Felixberto A., 4,318,349, Cl. 105-378.000.
Roldness, David J.; Archambeault, Jerry L.; and Barkhimer, Robert L., 4,318,649, Cl. 410-27.000.
Watson, Thomas H., 4,318,347, Cl. 105-199.0CB.

Purtell, Frederick H.: *See*—
Brown, William C.; and Purtell, Frederick H., 4,318,589, Cl. 350-125.000.

Putnik, Charles F.: *See*—
Peterson, Marvin L.; Putnik, Charles F.; and Maxson, Orwin G., 4,318,787, Cl. 204-147.000.

Quaker Oats Company, The: *See*—
Doyle, James E.; and Lembke, Russell B., 4,318,840, Cl. 523-144.000.
Dunlop, William R.; and Pentz, William J., 4,318,999, Cl. 521-171.000.
Stowell, Roger H.; Hirtle, Michael O.; Brown, Russell W.; and Moore, Arthur D., 4,318,245, Cl. 46-232.000.

Quasar Microsystems, Inc.: *See*—
Miller, Stanley F., 4,319,089, Cl. 179-6.060.

Queuille, Andre; and Rouiller, Gilbert, to Roussel Uclaf. Novel salt of 5-(benzoyl)-thiophene-2-α-methyl-acetic acid. 4,318,918, Cl. 424-275.000.

Quintilian, Bartholomew F. Automatic fuel monitoring system. 4,319,129, Cl. 235-97.000.

R. Alkan & Cie: *See*—
Hasquenoph, Jean H.; and Coutin, Pierre F., 4,318,561, Cl. 294-83.00R.

Rabinovitch, Maurice: *See*—
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Rae, Rory: *See*—
Willer, David A.; Rae, Rory; and Veldhoven, Gerardus A., 4,318,659, Cl. 414-511.000.

Ragen, Peter D. Fastener for blind holes. 4,318,651, Cl. 411-342.000.

Rahbe, Edward E.: *See*—
Bracken, Joseph W., Jr.; and Rahbe, Edward E., 4,318,372, Cl. 123-52.00M.

Rai-Choudhury, Prosenjit; and Bartko, John, to Westinghouse Electric Corp. Method for radiation hardening semiconductor devices and integrated circuits to latch-up effects. 4,318,750, Cl. 148-1.500.

Raider, Jerry W.: *See*—
Cook, Paul A.; Mayo, Randall D.; and Raider, Jerry W., 4,319,174, Cl. 318-696.000.

Rammler, Roland: *See*—
Albrecht, Johannes-Josef; Rammler, Roland; and Hirsch, Martin, 4,318,798, Cl. 208-11.00R.

Ranco Incorporated: *See*—
Marks, Robert T., 4,318,425, Cl. 137-625.430.

Rao, G. R. Mohan, to Texas Instruments Incorporated. Double level polysilicon series transistor devices. 4,319,263, Cl. 357-41.000.

Rapkin, Myron C.: *See*—
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Ratcliffe, Ronald W.: *See*—
Christensen, Burton G.; and Ratcliffe, Ronald W., 4,318,912, Cl. 424-263.000.

Rathi, Ram N., to Harnischfeger Corporation. Method of extending a jib of a telescopic crane. 4,318,488, Cl. 212-270.000.

Rauchwerger, George P. Suction type de-soldering tool. 4,318,504, Cl. 228-20.000.

Ravizza, Raymond F., to Ampex Corporation. Movable head automatic position acquisition circuit and method. 4,319,289, Cl. 360-77.000.

Ray, Ranjan; Polk, Donald E.; and Giessen, Bill C., to Marko Materials, Inc. Tool steels which contain boron and have been processed using a rapid solidification process and method. 4,318,733, Cl. 75-0.5BA.

Raychem Corporation: *See*—
Diaz, Stephen H., 4,318,220, Cl. 29-611.000.
Sopory, Umesh K., 4,318,881, Cl. 264-346.000.

RCA Corporation: *See*—
Chen, Hsing-Yao, 4,319,163, Cl. 315-14.000.
Crandall, Richard S., 4,319,187, Cl. 324-158.00D.
Hsu, Sheng T., 4,318,216, Cl. 29-571.000.
Kiess, Helmut G.; and Binggeli, Bruno K., 4,319,284, Cl. 358-294.000.
Mawhinney, Daniel D., 4,319,245, Cl. 343-8.000.
Mayer, Alfred, 4,318,749, Cl. 134-25.400.
Nicholson, John E.; and Wilmarth, Paul C., 4,319,277, Cl. 358-165.000.
Nossem, Edward J., 4,319,273, Cl. 358-120.000.
Smith, Thomas E., 4,318,877, Cl. 264-107.000.
Wendt, Frank S., 4,319,167, Cl. 315-411.000.
Wolf, Roger E., 4,319,359, Cl. 375-22.000.

Realex Corporation: *See*—
Magers, Wallace F.; and Palmisano, John J., 4,318,498, Cl. 222-153.000.

Rebafka, Walter; Heilen, Gerd; and Fliege, Werner, to BASF Aktiengesellschaft. Process for removing formaldehyde from aqueous solutions of but-2-yne-1,4-diol. 4,319,055, Cl. 568-856.000.

Redlich, William R., to Eagle Sheet Metal Mfg. Company. Mobile file cabinet with drawer stabilizing wheel support means. 4,318,575, Cl. 312-250.000.

Reid, Clyde D. Electric fuse for compensating heating in the center of the fusible element. 4,319,213, Cl. 337-161.000.

Reif, Werner: *See*—
Schuocker, Dieter; and Reif, Werner, 4,319,202, Cl. 372-83.000.

Rein-Weston, Karl J., to Boeing Company, The. Automatic approach landing and go-around control system for aircraft. 4,319,219, Cl. 340-27.0SS.

Reinert, Gerhard: *See*—
Polony, Rudolf; Reinert, Gerhard; Holzle, Gerd; Pugin, Andre; and Vonderwahl, Rodolphe, 4,318,883, Cl. 422-22.000.

Reiniche, Andre, to Compagnie Generale des Etablissements Michelin. Process and installation for the manufacture of a metal wire from a jet of molten metal. 4,318,440, Cl. 164-462.000.

Reitner, Wilhelm, to Siemens Aktiengesellschaft. Noise-reduced constructional unit of a device. 4,318,452, Cl. 181-207.000.

Relyea, Lloyd A.: *See*—
Brown, George A.; Relyea, Lloyd A.; Scharfe, Merlin E.; and Pinsler, Heinz W., 4,318,973, Cl. 430-31.000.

Remeika, Joseph P., to Bell Telephone Laboratories, Incorporated. Rare earth metal stannides. 4,318,741, Cl. 75-175.00R.

Remington, Richard C.; and Bako, Lazlo, to Kidde, Inc. (Presto Lock Company Division). Scramble-type combination lock. 4,318,287, Cl. 70-71.000.

Renton, Larry W.: *See*—
Checkley, David L.; and Renton, Larry W., 4,318,660, Cl. 414-518.000.

Rentzsch, Max; and Bock, Erich, to Diehl GmbH & Co. Anti-tank weapon. 4,318,329, Cl. 89-1.816.

Repa Feinstanzwerk GmbH: *See*—
Seifert, Helmut; and Mondel, Karl, 4,318,552, Cl. 280-801.000.

Replicap Products, Inc.: *See*—
Wood, Arthur A., 4,318,495, Cl. 220-375.000.

Repp, Arno, to Robert Bosch GmbH. Magnetic tape scanning device for recording and/or reproducing band signals. 4,319,294, Cl. 360-107.000.

Reppas, George S. Convertible furniture unit. 4,318,195, Cl. 5-2.00R.

Research Corporation: *See*—
Shaw, Elliott N.; and Kettner, Charles A., 4,318,904, Cl. 424-177.000.

Reuschel, Donald L.: *See*—
Larson, Frederick R.; Dangremond, Rodger L.; Reuschel, Donald L.; and Moore, James I., 4,318,682, Cl. 425-411.000.

Rewitzer, Siegfried, to Hoechst Aktiengesellschaft. Process and apparatus for the packaging of fibrous material in bales. 4,318,264, Cl. 53-436.000.

Rexnord Inc.: *See*—
Cutler, Donald B.; and Corey, Dennis J., 4,318,281, Cl. 64-1.00V.

Rheinstahl Aktiengesellschaft: *See*—
Hausenblas, Helmut, 4,318,330, Cl. 89-41.0TV.

Rheon Automatic Machinery Co., Ltd.: *See*—
Hayashi, Torahiko; Morikawa, Michio; and Shibata, Sadao, 4,318,678, Cl. 425-301.000.

Rhodes, Melvin H., to Rockwell International Corporation. Dual polarity fast discharge integrator apparatus. 4,319,173, Cl. 318-609.000.

Rhodes, Warren W.; and Yan, Man F., to Bell Telephone Laboratories, Incorporated. Method of preparing lightly doped ceramic materials. 4,318,995, Cl. 501-1.000.

Rhone-Poulenc Industries: *See*—
Komorn, Yves; and Schwachhofer, Ghislain, 4,319,047, Cl. 568-41.000.
Marze, Xavier; and Minfray, Michel, 4,319,008, Cl. 525-523.000.
Sohier, Bernard, 4,318,717, Cl. 55-71.000.

Rhone-Poulenc Systemes: *See*—
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Rice, Royal K. Smoke detector with dual sensors. 4,319,234, Cl. 340-628.000.

Richards, Frank P.; and Taylor, Raymond C., to Phillips Petroleum Company. Method for producing containers. 4,318,703, Cl. 493-149.000.

Richardson, Anthony C.; Praill, Perry F. G.; and Price, Robert G., to National Research Development Corporation. Enzyme assays. 4,318,986, Cl. 435-18.000.

Richardson, Ralph J.; and Lilenfeld, Harvey V., to McDonnell Douglas Corporation. Process for generating singlet-oxygen. 4,318,895, Cl. 423-579.000.

Riebel, Hans-Jochem: *See*—
Fuchs, Rainer; Naumann, Klaus; Riebel, Hans-Jochem; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, 4,318,922, Cl. 424-304.000.

Riehm, Charles E., Jr.: *See*—
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Riel, Frank J.: *See*—
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Riemersma, Pieter: *See*—
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Rifat, Sultan A. Steering column lock. 4,318,288, Cl. 70-252.000.

Rinderle, Heinz: *See*—
Malinowski, Christopher W.; Rinderle, Heinz; and Siegle, Martin, 4,319,227, Cl. 340-347.0DD.

Rippel, Wally E.; and Edwards, Dean B., to California Institute of Technology. Voltage reapplication rate control for commutation of thyristors. 4,319,318, Cl. 363-138.000.
Ritsema, Irving R., to Bendix Corporation, The. Disk brake and connecting assembly therefor. 4,318,458, Cl. 188-73.440.
Rivetti, Franco: *See—*
Romano, Ugo; Rivetti, Franco; and Di Muzio, Nicola, 4,318,862, Cl. 260-463.000.
RJR Foods, Inc.: *See—*
Evans, Susan D., 4,318,431, Cl. 141-90.000.
Robert Bosch GmbH: *See—*
Eheim, Franz, 4,318,378, Cl. 123-357.000.
Eheim, Franz; Konrath, Karl; Schwarz, Manfred; and Weiss, Otmar, 4,318,382, Cl. 123-502.000.
Knorreck, Peter, 4,318,379, Cl. 123-387.000.
Leiber, Heinz; and Mergenthaler, Robert, 4,318,272, Cl. 60-553.000.
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Roberts, Michael G.: *See—*
McCombs, Frank P.; and Roberts, Michael G., 4,318,960, Cl. 428-378.000.
Robertson, George H.; and Farkas, Daniel F., to United States of America, Agriculture. Apparatus for removing corn from cob. 4,318,415, Cl. 130-8.000.
Robertson, Jacqueline L.: *See—*
Moellman, Emanuel E.; and Robertson, Jacqueline L., 4,318,363, Cl. 118-699.000.
Robey, Roger L.; and Smirz, Jeffrey C., to Eli Lilly and Company. Chlorination of 4-methoxybenzoyl chloride. 4,318,866, Cl. 260-544.00D.
Robinson Industries, Inc.: *See—*
Gutzwiller, Howard L., 4,318,693, Cl. 432-201.000.
Robinson, J. Ronald, to Crafco, Inc. Asphalt container. 4,318,475, Cl. 206-447.000.
Rock Mill, Inc.: *See—*
Hall, Stephen R.; and Lindmark, Craig L., 4,318,324, Cl. 83-397.000.
Rockwell International Corporation: *See—*
Appleberry, Walter T., 4,318,522, Cl. 248-178.000.
Rhodes, Melvin H., 4,319,173, Cl. 318-609.000.
Roddy, Joseph T.; and Butler, William R., to Emerson Electric Co. End shield mounting system for dynamoelectric machine. 4,319,150, Cl. 310-89.000.
Rogers, Gerald L.; and Schulte, Ronald B., to Emerson Electric Co. Windshield wiper arm. 4,318,201, Cl. 15-250.350.
Rogers, Norman H.: *See—*
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Rogier, Edgar R., to Henkel Corporation. Bis hydroxymethyl tricyclo $(5,2,1,0^{2,6})$ decane. 4,319,049, Cl. 568-445.000.
Rohm and Haas Company: *See—*
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Rohr Industries, Inc.: *See—*
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Rose, Philip M.; and Riel, Frank J., 4,318,453, Cl. 181-292.000.
Roldness, David J.; Archambeault, Jerry L.; and Barkhimer, Robert L., to Pullman Incorporated. Locking mechanism for B deck of auto-rack railway car. 4,318,649, Cl. 410-27.000.
Rolf, Meinhard: *See—*
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Rolls-Royce Limited: *See—*
Pask, George, 4,318,666, Cl. 415-116.000.
Romain, Bernard F. Powered liquid inlet screen. 4,318,233, Cl. 37-57.000.
Romano, Giuliano, to National Distillers & Chemical Corp. Absorber intercooler. 4,318,872, Cl. 261-140.00A.
Romano, Ugo; Rivetti, Franco; and Di Muzio, Nicola, to Anic S.p.A. Process for producing dimethylcarbonate. 4,318,862, Cl. 260-463.000.
Rona, Thomas P., to Boeing Company, The. Removable external payload carrier for aircraft. 4,318,328, Cl. 89-1.815.
Roncucci, Romeo; and Lansen, Jacqueline, to Continental Pharma. Process for determining malondialdehyde. 4,318,706, Cl. 23-230.00B.
Roos, Jan; Compaan, Klaas; and van Kasteren, Adrianus C., to U.S. Philips Corporation. Apparatus for converting cinematographic pictures into video signals. 4,319,280, Cl. 358-214.000.
Rose, Philip M.; and Riel, Frank J., to Rohr Industries, Inc. Double layer attenuation panel. 4,318,453, Cl. 181-292.000.
Rosen, Arye; and Klatskin, Jerome B., to United States of America, Army. Monolithically interconnected series-parallel avalanche diodes. 4,319,265, Cl. 357-76.000.
Ross, Phillip J., to General Motors Corporation. Centrifugally actuated valve for transmission. 4,318,311, Cl. 74-752.00C.
Rottmayr, Hans: *See—*
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Rouiller, Gilbert: *See—*
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Queuille, Andre; and Rouiller, Gilbert, 4,318,918, Cl. 424-275.000.
Rowland, David L. Chair and seat-back unit therefor. 4,318,556, Cl. 297-445.000.
Rowsell, David G.; Spring, David J.; and Hems, Roger, to Wilkinson Sword Limited. Alicyclic amides having a physiological cooling effect. 4,318,900, Cl. 424-54.000.
Rubinfield, Louis P., to Burroughs Corporation. Arithmetic logic unit controller. 4,319,335, Cl. 364-787.000.
Ruegg, Rudolf: *See—*
Bollag, Werner; Ruegg, Rudolf; and Ryser, Gottlieb, 4,319,048, Cl. 568-442.000.
Ruetschi, Paul, to Leclanche' S.A. Long-life galvanic primary cell. 4,318,967, Cl. 429-48.000.
Runge, Hartmut, to Siemens Aktiengesellschaft. Process for gettering semiconductor components and integrated semiconductor circuits. 4,319,119, Cl. 219-121.0LM.
Rusch, Randy A.: *See—*
Moss, David E.; Stone, Karl E.; Bright, Charles A., Jr.; and Rusch, Randy A., 4,318,936, Cl. 427-38.000.
Russell, Robert J., to Mail-Ex Corporation. Envelope cutter apparatus. 4,318,322, Cl. 83-94.000.
Russell, T. W. Fraser: *See—*
Barnett, Allen M.; Baron, Bill N.; Masi, James V.; and Russell, T. W. Fraser, 4,318,938, Cl. 427-75.000.
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Styskin, Evgeny L.; Gurvich, Yakov A.; Kumok, Simona T.; Starikova, Olga F.; Rutman, Grigory I.; Michurov, Jury I.; Yanshevsky, Vladimir A.; Gusev, Vladimir K.; and Liakumovich, Alexandr G., 4,319,052, Cl. 568-727.000.
Ryan, James M.: *See—*
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Bollag, Werner; Ruegg, Rudolf; and Ryser, Gottlieb, 4,319,048, Cl. 568-442.000.
Rysti, Alpo: *See—*
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S&C Electric Company: *See—*
Chabala, Leonard V., 4,319,108, Cl. 200-308.000.
Sabre Products, Inc.: *See—*
Eggert, Carl A., 4,319,328, Cl. 364-466.000.
Sachs, Emanual M., to Mobil Tyco Solar Energy Corporation. Method of monitoring crystal growth. 4,318,769, Cl. 156-601.000.
Sack, Berthold: *See—*
Forster, Siegfried; and Sack, Berthold, 4,318,689, Cl. 431-208.000.
Sage, Paul F. Apparatus for cold peeling citrus fruit. 4,318,339, Cl. 99-589.000.
Sagusa, Hisayuki; Hashimoto, Hiroshi; Nomura, Yasushi; Satou, Takehide; and Yabe, Ryohei. Automatic rate analyzing method. 4,318,615, Cl. 356-320.000.
St. Florian Company, Ltd.: *See—*
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Sainton, Joseph B.: *See—*
Weldon, James O.; and Sainton, Joseph B., 4,319,204, Cl. 332-9.00R.
Saito, Masato: *See—*
Watanabe, Keiji; Saito, Masato; and Fukuyama, Keiji, 4,319,158, Cl. 313-346.00R.
Saito, Shozo: *See—*
Sujumura, Takeshi; Saito, Shozo; Saito, Takashi; and Hirakawa, Hiromasa, 4,318,777, Cl. 376-253.000.
Saito, Tadayoshi: *See—*
Sato, Yoshio; Kurihara, Nobuo; Nomura, Masahide; Kawano, Shigeyoshi; and Saito, Tadayoshi, 4,319,320, Cl. 364-165.000.
Saito, Takashi: *See—*
Sujumura, Takeshi; Saito, Shozo; Saito, Takashi; and Hirakawa, Hiromasa, 4,318,777, Cl. 376-253.000.
Saito, Takemi: *See—*
Ando, Kunio; Saito, Takemi; Toyama, Seiji; and Yamataka, Syuichi, 4,318,584, Cl. 350-10.000.
Sakai, Munetaka: *See—*
Matsumoto, Genya; Sakai, Munetaka; Nakata, Shigeki; and Kawabata, Toshio, 4,319,044, Cl. 562-559.000.
Sakamoto, Hatsuo: *See—*
Daitoku, Koichi; Sakamoto, Hatsuo; Terui, Nobuhiko; Hozumi, Toshiaki; Sekine, Yoshio; Hyodo, Yukio; Ichikawa, Masanori; Wada, Masamichi; Kudo, Tsuyoshi; Nakamura, Manabu; Nakanishi, Nobuaki; Komai, Takeo; and Matsuzawa, Yoshio, 4,318,603, Cl. 354-214.000.
Sakamoto, Takahide: *See—*
Hiroshima, Tatsuo; Sakamoto, Takahide; Matsui, Kenichi; and Ohgaki, Ichiroh, 4,318,439, Cl. 164-154.000.
Sakharnov, Vasily A.: *See—*
Kuchuk-Yatsenko, Sergei I.; Kazymov, Boris I.; Zagadarchuk, Vasily F.; Solodovnikov, Sergei A.; and Sakharnov, Vasily A., 4,319,117, Cl. 219-100.000.
Sakoe, Hiroaki, to Nippon Electric Co., Ltd. Similarity calculator comprising a buffer for a single input pattern feature vector to be pattern matched with reference patterns. 4,319,221, Cl. 340-146.30Q.
Salee, Gideon: *See—*
Kosanovich, George M.; and Salee, Gideon, 4,319,017, Cl. 528-176.000.
Salge, Edward A.: *See—*
Minalga, Philip F.; and Salge, Edward A., 4,318,357, Cl. 112-158.00E.
Salisbury, Winfield W. Electric drive propulsion system for vehicles. 4,318,449, Cl. 180-65.00R.
Salkeld, Robert J.; and Sklarew, Ralph C. Closed space structures. 4,318,517, Cl. 244-158.00R.

Sandel, Dan S. Surgical blade removal and disposal device. 4,318,473, Cl. 206-370.000.

Sander, Hans: *See*—
Kohler, Klaus; Woditsch, Peter; Stutgens, Heribert; Bayer, Eckhard; Nollen, Klaus; and Sander, Hans, 4,318,843, Cl. 523-212.000.
Kohler, Klaus; Woditsch, Peter; Stutgens, Heribert; Bayer, Eckhard; Nollen, Klaus; and Sander, Hans, 4,318,844, Cl. 524-212.000.

Sander, Willy M.; Boudreau, David L.; and Hohl, G. Burnell, to Dictaphone Corporation. Apparatus for displaying the status of individual dictated messages in a central dictation system. 4,319,337, Cl. 364-900.000.

Sanders, Daniel: *See*—
Shay, Harry; Sanders, Daniel; Turner, Nelson R.; and Bienenstein, Charles, 4,318,551, Cl. 280-788.000.

Sanders, Edward B.; and Houminer, Yoram, to Philip Morris, Incorporated. Smoking compositions. 4,318,418, Cl. 131-278.000.

Sanders, James M.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Schmitt, Frederick L.; and Granda, Edward J., 4,319,036, Cl. 560-120.000.

Sandri, Joseph M.; Calentine, John W.; Linder, Seymour M.; and Billoux, Yves J., to Alcolac Inc. Derivatives of aminoalkyl alkylene ureas. 4,319,032, Cl. 548-320.000.

Sanraku-Ocean Co., Ltd.: *See*—
Okamura, Kazuhiko; Hirata, Shoji; Okumura, Yasushi; Fukagawa, Yasuo; Shimauchi, Yasutaka; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,318,916, Cl. 424-274.000.

Sasaya, Osamu: *See*—
Nishizawa, Masahiro; Miura, Kiyoshi; Yokomizo, Hiroshi; Sasaya, Osamu; Morishita, Hajime; and Uchino, Shoichi, 4,318,971, Cl. 430-28.000.

Sasol One (Proprietary) Limited: *See*—
Jager, Berend; Brink, Andries; and Kleynjan, Cornelis, 4,318,797, Cl. 208-8.0LE.

Satake Engineering Co., Ltd.: *See*—
Satake, Toshihiko, 4,318,806, Cl. 209-496.000.

Satake, Toshihiko, to Satake Engineering Co., Ltd. Automatic control apparatus for a grain separator. 4,318,806, Cl. 209-496.000.

Sato, Koji; Koyatsu, Osamu; Okitsu, Takumi; Harada, Yoshio; and Yamamura, Yuji, to Kabushiki Kaisha Saginomiya Seisakusho. Self-registering temperature control device. 4,318,276, Cl. 62-126.000.

Sato, Reiko: *See*—
Hamazaki, Yasuhiko; Ishiyama, Nobuo; Yamamoto, Toshiyuki; Seri, Kenji; and Sato, Reiko, 4,318,923, Cl. 424-309.000.

Sato, Shigeru: *See*—
Takano, Tadashi; Mizusawa, Motoo; Betsudan, Shinichi; and Sato, Shigeru, 4,319,250, Cl. 343-781.0CA.

Sato, Takashi: *See*—
Kuroki, Katsuro; Iwayama, Kenzo; and Sato, Takashi, 4,318,758, Cl. 148-111.000.

Sato, Yoshio; Kurihara, Nobuo; Nomura, Masahide; Kawano, Shigeyoshi; and Saito, Tadayoshi, to Hitachi, Ltd. System and method for adaptive control of process. 4,319,320, Cl. 364-165.000.

Sato, Yuichi: *See*—
Yokoo, Kenta; Kishimoto, Tomio; and Sato, Yuichi, 4,319,078, Cl. 178-18.000.

Satoh, Masatoshi; and Yokocho, Yoetsu, to Kioritz Corporation. Single-handed operation type scavenging blower. 4,318,203, Cl. 15-344.000.

Satou, Takehide: *See*—
Sagusa, Hisayuki; Hashimoto, Hiroshi; Nomura, Yasushi; Satou, Takehide; and Yabe, Ryohei, 4,318,615, Cl. 356-320.000.

Sauer, Heinrich. Internal combustion engine. 4,318,375, Cl. 123-195.00R.

Savit, Carl H., to Western Geophysical Co. of America. Seismic method and system of improved resolution and discrimination. 4,319,347, Cl. 367-52.000.

Sawada, Masahiro: *See*—
Kawahara, Atsushi; Sawada, Masahiro; and Fujii, Norio, 4,318,886, Cl. 422-68.000.

Sawyer, Edgar W., Jr., to International Telephone and Telegraph Corporation. Methods of improving the viscosity building properties of colloidal clays. 4,318,732, Cl. 71-64.800.

Say, Donald L., to North American Philips Consumer Electronics Corp. One piece astigmatic grid for color picture tube electron gun and method of making same. 4,319,160, Cl. 313-458.000.

Schansman, Raymond R.: *See*—
Currie, James R.; and Schansman, Raymond R., 4,319,133, Cl. 250-214.00B.

Scharfe, Merlin E.: *See*—
Brown, George A.; Relyea, Lloyd A.; Scharfe, Merlin E.; and Pinsler, Heinz W., 4,318,973, Cl. 430-31.000.

Schartau, Wolfgang: *See*—
Zabrocki, Karl; Schulze, Hans; Weider, Franz; Wellner, Wolfgang; and Schartau, Wolfgang, 4,318,832, Cl. 523-402.000.

Scheinpflug, Hans: *See*—
Fest, Christa; Kraus, Peter; and Scheinpflug, Hans, 4,318,924, Cl. 424-322.000.

Schenk-Filterbau Gesellschaft mit beschrankter Haftung: *See*—
Ziller, Josef, 4,318,811, Cl. 210-232.000.

Scheuerlein, Roy E., to International Business Machines Corporation. One device field effect transistor (FET) AC stable random access memory (RAM) array. 4,319,342, Cl. 365-149.000.

Schickel, Eberhard: *See*—
Molter, Michael; Kloss, Gerhard; and Schickel, Eberhard, 4,318,898, Cl. 424-1.000.

Schiemichen, Peter; and Zimmermann, Werner, to Deutsche Babcock Aktiengesellschaft. Lifting island. 4,318,640, Cl. 405-199.000.

Schier, Robert W. Table with folding legs. 4,318,353, Cl. 108-132.000.

Schievelbein, Vernon H., to Texaco Inc. Surfactant waterflooding enhanced oil recovery method using stabilized surfactant solution. 4,318,816, Cl. 252-8.55D.

Schiff, Sidney: *See*—
Heckelsberg, Louis F.; Nelson, William T.; Schiff, Sidney; and Zuech, Ernest A., 4,319,064, Cl. 585-10.000.

Schiffmann, Robert F.; Mirman, Alfred H.; and Grillo, Richard J., to International Telephone and Telegraph Corporation. Method of baking firm bread. 4,318,931, Cl. 426-243.000.

Schiller, Peter, to Siemens Aktiengesellschaft. Impermeable cooled closing plug for processing tubes, in particular in semiconductor manufacture. 4,318,889, Cl. 422-203.000.

Schiwy, Willy: *See*—
Molls, Hans-Heinz; Schiwy, Willy; Hornle, Reinhold; and Nebeling, Reinhard, 4,318,848, Cl. 260-143.000.

Schlagel, Carl A.: *See*—
Ayer, Donald E.; and Schlagel, Carl A., 4,318,853, Cl. 260-239.55R.

Schlarmann, Philip J., to Iowa Manufacturing Company of Cedar Rapids, Iowa. Method of and apparatus for asphaltic concrete hot mix recycling. 4,318,619, Cl. 366-4.000.

Schlauer, Johann: *See*—
Doerges, Alexander; Kriebel, Manfred; and Schlauer, Johann, 4,318,716, Cl. 55-48.000.

Schlegel Corporation: *See*—
Landreth, Philip R., 4,318,249, Cl. 49-490.000.

Schley, Ronald F.: *See*—
Hartman, G. William, Jr.; and Schley, Ronald F., 4,319,282, Cl. 358-286.000.

Schlumberger Technology Corporation: *See*—
Chemali, Roland; and Tabanou, Jacques, 4,319,192, Cl. 324-375.000.

Schmall, Robert A.: *See*—
Thome, William L.; and Schmall, Robert A., 4,318,534, Cl. 266-113.000.

Schmidt, Gertraud A., to GK Technologies, Incorporated. Waterproof multi-pair telephone cable with improved filling compound. 4,319,071, Cl. 174-23.00C.

Schmidt-Ruppin, Karl H.; Lukas, Bohumir; and Wiesendanger, Walter, to Ciba-Geigy Corporation. Method of curing or alleviating herpes infections and pharmaceutical compositions suitable therefor. 4,318,926, Cl. 424-330.000.

Schmitt, Frederick L.: *See*—
Klemarczyk, Philip T.; Sanders, James M.; Vock, Manfred H.; Schmitt, Frederick L.; and Granda, Edward J., 4,319,036, Cl. 560-120.000.

Schmugge, Frederick K. Turbine configurations using wind and solar power. 4,319,141, Cl. 290-52.000.

Schnabel, Siegfried, to Vereinigte Flugtechnische Werke-Fokker GmbH. Staking tool for installation of spherical bearings and bushings with ring-grooved faces for retention. 4,318,212, Cl. 29-252.000.

Schneider, John F., to Minnesota Mining & Manufacturing Company. Bottle closing device. 4,318,490, Cl. 215-232.000.

Schneider, Richard: *See*—
Manzke, Klaus; Hammerschmitt, Peter; Schneider, Richard; and Uhl, Karl, 4,319,354, Cl. 360-106.000.

Schneider, Urban A.: *See*—
Glatthorn, Raymond H.; Monley, Robert E.; and Schneider, Urban A., 4,319,113, Cl. 219-60.200.

Schnell, William J.: *See*—
Edelman, William; Hitchcock, James R., Jr.; and Schnell, William J., 4,318,813, Cl. 210-321.400.

Schockelt, Guenter G.: *See*—
Lott, Donald L.; Schockelt, Guenter G.; and Worrix, Matthew L., 4,319,105, Cl. 200-148.00A.

Schoeber, Gernot: *See*—
Zeidler, Guenter; Oestreich, Ulrich; and Schoeber, Gernot, 4,318,588, Cl. 350-96.230.

Scholin, Harold W. Sealing ring and method and apparatus for making same. 4,318,319, Cl. 82-47.000.

Scholz, Werner, to Licentia Patent-Verwaltungs-G.m.b.H. Control voltage generator for a system for dynamic compression or expansion. 4,319,205, Cl. 333-14.000.

Schoonover, Michael W., to UOP Inc. Manufacture of alumina particles. 4,318,896, Cl. 423-628.000.

Schosek, William O. Connector fitting for use in installing underground plastic pipes. 4,318,639, Cl. 405-184.000.

Schott, Lawrence A. Cutting tool. 4,318,318, Cl. 82-1.00C.

Schreiber, Richard J.; Kesselring, John P.; and Kendall, Robert M., to Acurex Corporation. Catalytic gas-fired furnace system and method. 4,318,392, Cl. 126-110.00R.

Schubert and Salzer: *See*—
Egbers, Gerhard; Artzt, Peter; Brosch, Karl; and Rottmayr, Hans, 4,318,269, Cl. 57-18.000.

Schuck, David B.: *See*—
Kocol, James E.; and Schuck, David B., 4,319,356, Cl. 371-38.000.

Schuck, Paul R., to J. I. Case Company. Side shift plow assembly. 4,318,445, Cl. 172-477.000.

Schuegraf, Eberhard, to Siemens Aktiengesellschaft. Transducer for orthogonally polarized signals of different frequencies. 4,319,206, Cl. 333-126.000.

Schuierer, Manfred, to Bruckner Apparatebau GmbH. Apparatus for the wet treatment of tubular knitted textile material. 4,318,209, Cl. 26-74.000.

Schulte, Ronald B.: *See*—
Rogers, Gerald L.; and Schulte, Ronald B., 4,318,201, Cl. 15-250.350.

Schulze, Hans: *See*—
Zabrocki, Karl; Schulze, Hans; Weider, Franz; Wellner, Wolfgang; and Schartau, Wolfgang, 4,318,832, Cl. 523-402.000.

Schuocker, Dieter; and Reif, Werner, to Voest-Alpine Aktiengesellschaft. Transversely electrically excited atmospheric pressure gas laser working in pulses (tea laser). 4,319,202, Cl. 372-83.000.

Schuster, Samuel R.; Kopito, Louis; and Kosasky, Harold, to Ovutime, Inc. Probe for obtaining cervical mucus. 4,318,414, Cl. 128-759.000.

Schutz, Hans U.: *See*—
Buhler, Arthur; and Schutz, Hans U., 4,318,849, Cl. 260-148.000.

Schwabische Huttenwerke Gesellschaft mit beschrankter Haftung: *See*—
Brauer, Hans-Martin, 4,318,564, Cl. 295-11.000.

Schwachhofer, Ghislain: *See*—
Komorn, Yves; and Schwachhofer, Ghislain, 4,319,047, Cl. 568-41.000.

Schwarz, Frederick M.: *See*—
Chaplin, Gary F.; Schwarz, Frederick M.; and Griffin, James G., 4,318,668, Cl. 415-135.000.

Schwarz, Gunter. Ski attachment. 4,318,553, Cl. 280-814.000.

Schwarz, Hans-Helmut: *See*—
Heuser, Jurgen; Jeromin, Gunther; Schwarz, Hans-Helmut; and Friedhofen, Gerhard, 4,319,053, Cl. 568-727.000.

Schwarz, Manfred: *See*—
Eheim, Franz; Konrath, Karl; Schwarz, Manfred; and Weiss, Otmar, 4,318,382, Cl. 123-502.000.

Scott, Angus A.: *See*—
McGeary, Thomas C.; and Scott, Angus A., 4,319,131, Cl. 235-375.000.

Scott & Fetzer Company, The: *See*—
Bolin, Donald E., 4,319,101, Cl. 200-38.00R.

Scott, Larkin B.: *See*—
Chamran, Morteza M.; Scott, Larkin B.; and Williams, Paul B., 4,318,616, Cl. 356-332.000.

Scott, Lawrence M.; Wolf, Irving; and Lee, Yu C., to Ampex Corporation. Reduction of iron oxide utilizing dehydrating agent. 4,318,734, Cl. 75-0.5BA.

Seano, Vittorio: *See*—
Brosio, Alberto; and Seano, Vittorio, 4,319,203, Cl. 372-30.000.

Sebulsky, Raynor T.: *See*—
Lese, Henri K.; Sebulsky, Raynor T.; Stanulonis, John J.; Tabacek, Joseph A.; and Vogel, Roger F., 4,318,801, Cl. 208-216.00R.

Segawa, Takashi, to Shimano Industrial Company, Ltd. Gear crank apparatus for a bicycle. 4,318,310, Cl. 74-594.200.

Seidel, Heinz H., to GTE Products Corporation. Cutting insert. 4,318,644, Cl. 407-114.000.

Seifert, Everhard, to Sulzer Brothers Ltd. Warp beam. 4,318,428, Cl. 139-97.000.

Seifert, Helmut; and Mondel, Karl, to Repa Feinstanzwerk GmbH. Deflection device for safety belts. 4,318,552, Cl. 280-801.000.

Seike, Riyuuzou: *See*—
Horimoto, Rioichi; and Seike, Riyuuzou, 4,318,757, Cl. 148-105.000.

Seiner, Jerome A.: *See*—
Blasko, John E.; Boberski, William G.; and Seiner, Jerome A., 4,318,743, Cl. 106-84.000.

Sekiguchi, Shizuo; Tano, Tetsuo; Kitano, Kyozo; and Ogoshi, Toshiaki, to Lion Fat & Oil Co., Ltd., The. Light colored homogeneous and aqueous alpha olefin sulfonate solutions. 4,318,823, Cl. 252-353.000.

Sekimoto, Souichi: *See*—
Ozawa, Takashi; Takenouchi, Mutsuo; Sekimoto, Souichi; and Kikuchi, Yoshiki, 4,319,283, Cl. 358-286.000.

Sekine, Kenji: *See*—
Hirota, Yukitsugu; Kaneko, Yoichi; Sekine, Kenji; Endo, Akira; and Kimura, Katsuhiro, 4,319,244, Cl. 343-8.000.

Sekine, Yoshio: *See*—
Daitoku, Koichi; Sakamoto, Hatsuo; Terui, Nobuhiko; Hozumi, Toshiaki; Sekine, Yoshio; Hyodo, Yukio; Ichikawa, Masanori; Wada, Masamichi; Kudo, Tsuyoshi; Nakamura, Manabu; Nakanishi, Nobuaki; Komai, Takeo; and Matsuzawa, Yoshio, 4,318,603, Cl. 354-214.000.

Sensatrol, Inc.: *See*—
Glasgow, Norman B.; and Coleman, William E., Jr., 4,318,508, Cl. 236-47.000.

Sensor Technology, Inc.: *See*—
Weber, Otto K., 4,319,134, Cl. 250-231.0SE.

Sentrol Systems Ltd.: *See*—
Hill, John H., 4,319,185, Cl. 324-58.50A.

Sepp, Hermann, to Siemens Aktiengesellschaft. Information transmission. 4,319,358, Cl. 375-1.000.

Ser, Jean-Claude: *See*—
Zaffran, Christian; Ser, Jean-Claude; and Yquel, Jean-Pierre, 4,318,297, Cl. 73-78.000.

Seri, Kenji: *See*—
Hamazaki, Yasuhiko; Ishiyama, Nobuo; Yamamoto, Toshiyuki; Seri, Kenji; and Sato, Reiko, 4,318,923, Cl. 424-309.000.

Sessum, Charles E. Biased traveling crane drive. 4,318,346, Cl. 105-163.00R.

Sew-Eurodrive GmbH and Co. Suddeutsche Elektromotoren-Werke: *See*—
Fischer, Horst, 4,318,306, Cl. 74-433.000.

SGS-ATES Componenti Elettronici S.p.A.: *See*—
Bertotti, Franco; Prestileo, Vincenzo; and Foroni, Mario, 4,319,262, Cl. 357-35.000.

Shaban Manufacturing Ltd.: *See*—
Sweet, Edmund G. F., 4,319,138, Cl. 250-576.000.

Sharp Kabushiki Kaisha: *See*—
Miyake, Toshihide, 4,318,600, Cl. 354-51.000.
Tanabe, Takeshi; Nakagawa, Hideshi; and Fujihara, Takeshi, 4,319,110, Cl. 219-10.55B.

Shaw, Elliott N.; and Kettner, Charles A., to Research Corporation. Peptide affinity labels for thrombin and other trypsin-like proteases. 4,318,904, Cl. 424-177.000.

Shaw, Stephen R.: *See*—
Parker, David S.; Shaw, Stephen R.; and Hudson, Robert, 4,318,296, Cl. 73-61.400.

Shay, Harry; Sanders, Daniel; Turner, Nelson R.; and Bienenstein, Charles, to Model A and Model T Motor Car Reproduction Corp., The. Vehicle front suspension system support. 4,318,551, Cl. 280-788.000.

Shell Oil Company: *See*—
Hogervorst, Johannes R., 4,318,641, Cl. 405-224.000.
Van Grinsven, Petrus F. A.; and Post, Martin F. M., 4,318,802, Cl. 208-245.000.

Shenoha, James L.; and Burch, Robert A., to Norwood Marking & Equipment Co., Inc. Variable tape advance imprint marker. 4,318,340, Cl. 101-27.000.

Shepherd, Robert G., to American Cyanamid Company. Hypolipidemic and antiatherosclerotic 4-(polyfluoro-alkylamino)phenyl compounds. 4,318,914, Cl. 424-267.000.

Shepherd, Robin G.: *See*—
White, Alan C.; and Shepherd, Robin G., 4,318,909, Cl. 424-244.000.

Sheridan Contractors (Engineering) Limited: *See*—
Thomas, Norman S., 4,318,636, Cl. 405-153.000.

Sherwin-Williams Company, The: *See*—
Vacek, Lubomir, 4,319,046, Cl. 564-413.000.

Shibata, Sadao: *See*—
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Shimano Industrial Company Limited: *See*—
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Shimauchi, Yasutaka: *See*—
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Shimizu, Akira: *See*—
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, 4,318,611, Cl. 355-14.0SH.

Shimizu, Tetsuo, to Universal Pioneer Corporation. Video switch circuit. 4,319,278, Cl. 358-181.000.

Shin-Etsu Chemical Co., Ltd.: *See*—
Arai, Masatoshi, 4,319,034, Cl. 556-425.000.

Shin-Gijutsu Kaihatsu Jigyodan: *See*—
Masumoto, Tsuyoshi; Inoue, Akihisa; and Arakawa, Shunsuke, 4,318,738, Cl. 75-122.000.

Shingu, Shitta; Takahashi, Atsushi; and Kosugi, Isao, to Tokyo Shibaura Denki Kabushiki Kaisha. Hydraulic apparatus. 4,318,332, Cl. 91-29.000.

Shinkle, Charles P.: *See*—
Calvert, James W.; and Shinkle, Charles P., 4,318,465, Cl. 198-341.000.

Shionogi & Co., Ltd.: *See*—
Hirai, Kentaro; Matsutani, Shigeru; Ishiba, Teruyuki; Makino, Itsuo; Doteuchi, Masami; and Otani, Koichi, 4,318,858, Cl. 260-347.200.

Shirasu, Hiroshi: *See*—
Ogasawara, Akira; Utagawa, Ken; Hoshino, Kunihisa; and Shirasu, Hiroshi, 4,319,238, Cl. 340-753.000.

Shoher, Itzhak; and Whiteman, Aharon E. Dental restorative anterior structure. 4,318,697, Cl. 433-208.000.

Showalter, M. Robert; Kriesel, Kenneth W.; and Siewert, Charles L., to Automotive Engine Associates. Vortex fuel air mixer. 4,318,386, Cl. 123-590.000.

Showalter, M. Robert; Clark, John M., Jr.; and Fogwell, J. Wray, to Automotive Engine Associates. Analog carburetor. 4,318,868, Cl. 261-41.00D.

Shrimpton, Ronald H.; and Cooney, Peter L., to Dunlop Limited. Process for the production of cellular elastomeric compositions and compositions obtained thereby. 4,318,875, Cl. 264-54.000.

Shu, Jing S.; Lee, Wei; Varnell, Gilbert L.; and Bartelt, John L., to Texas Instruments Incorporated. High gel rigidity, negative electron beam resists. 4,318,976, Cl. 430-287.000.

Shurman, Louis W., to Firestone Tire & Rubber Company, The. Tire sidewall addition members that undergo perceptible change during abnormal operation. 4,318,436, Cl. 152-353.00R.

Siegel, Bart A.; Hughes, Hal S., Jr.; and Mullins, Winston M., to Insulation Materials, Inc. Strap system for supporting insulation in buildings. 4,318,260, Cl. 52-407.000.

Siegenia-Frank AG: *See*—
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Siegle, Martin: *See*—
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Siemens Aktiengesellschaft: *See*—
Elmovist, Hakan, 4,318,411, Cl. 128-419.0PG.
Gall, Arthur; and Marhoff, Paul, 4,319,281, Cl. 358-244.000.
Grassl, Erwin, 4,318,587, Cl. 350-96.200.
Kretschmer, Klaus; and Tuschy, Peter, 4,319,073, Cl. 174-73.00R.
Reitner, Wilhelm, 4,318,452, Cl. 181-207.000.
Runge, Hartmut, 4,319,119, Cl. 219-121.0LM.
Schiller, Peter, 4,318,889, Cl. 422-203.000.
Schuegraf, Eberhard, 4,319,206, Cl. 333-126.000.
Sepp, Hermann, 4,319,358, Cl. 375-1.000.
Tappeiner, Hermann; Paessler, Ernst-Robert; Smutny, Kurt; and Krugel, Karl-Heinz, 4,319,224, Cl. 340-310.00R.
Vachenauer, Erwin; Wagner, Gerhard; and Mueller, Bernd, 4,319,243, Cl. 343-6.50R.
Wiesner, Wolfgang, 4,319,077, Cl. 178-17.00C.
Wilhelm, Wilhelm, 4,319,072, Cl. 174-34.000.
Zeidler, Guenter; Oestreich, Ulrich; and Schoeber, Gernot, 4,318,588, Cl. 350-96.230.
Siemens-Allis, Inc.: *See*—
Lott, Donald L.; Schockelt, Guenter G.; and Worrix, Matthew L., 4,319,105, Cl. 200-148.00A.
Sieradzki, Ryszard, to Tracer Control Company. Numerical control system. 4,319,172, Cl. 318-608.000.
Siewert, Charles L.: *See*—
Showalter, M. Robert; Kriesel, Kenneth W.; and Siewert, Charles L., 4,318,386, Cl. 123-590.000.
Silhouette-Modellbrillen Frabrikationsgesellschaft m.b.H.: *See*—
Gartner, Johann, 4,318,879, Cl. 264-163.000.
Simeth, Claus: *See*—
Pietsch, Erich; and Simeth, Claus, 4,318,341, Cl. 101-365.000.
Simoneau, Conrad. Ice stud for shoes. 4,318,231, Cl. 36-67.00R.
Sindelar, William E., to Danly Machine Corporation. Driving assembly for power press producing slow-down on closure of dies. 4,318,295, Cl. 72-450.000.
Sing, Edmond L. Preparation of cottage cheese containing *Streptococcus diacetilactis*. 4,318,928, Cl. 426-38.000.
Singer Company, The: *See*—
Brown, William C.; and Purtell, Frederick H., 4,318,589, Cl. 350-125.000.
Minalga, Philip F.; and Salge, Edward A., 4,318,357, Cl. 112-158.00E.
Singh, Braj K.: *See*—
Carson, William R.; and Singh, Braj K., 4,318,368, Cl. 122-34.000.
Sklarew, Ralph C.: *See*—
Salkeld, Robert J.; and Sklarew, Ralph C., 4,318,517, Cl. 244-158.00R.
Skripek, Milan: *See*—
Dvoracek, Louis M.; Fischer, Paul W.; and Skripek, Milan, 4,319,063, Cl. 585-4.000.
Skypala, Louis M., to Budd Company, The. Overhead wiring arrangement for a railway car. 4,318,350, Cl. 105-397.000.
Slade, Paul G.: *See*—
Kimblin, Clive W.; Holmes, Francis A.; Heberlein, Joachim V. R.; Gorman, Joseph G.; and Slade, Paul G., 4,319,296, Cl. 361-4.000.
Sloan, Richard A., Jr.: *See*—
Hurkmans, Antoon M.; Arnoldi, Douglas R.; and Sloan, Richard A., Jr., 4,319,254, Cl. 346-140.00R.
Sluys, Wesley W., to Builders Concrete, Inc. Lightweight concrete marine float and method of constructing same. 4,318,361, Cl. 114-263.000.
Small, Samuel N.: *See*—
Pappas, Dennis G.; Baum, Matthew C.; Small, Samuel N.; Adams, Robert T.; and Freedman, Robert P., 4,319,220, Cl. 340-58.000.
Smirnova, Nadezhda F.: *See*—
Kuznetsov, Vladimir N.; Smirnova, Nadezhda F.; and Karpov, Vladimir D., 4,318,975, Cl. 430-260.000.
Smirz, Jeffrey C.: *See*—
Robey, Roger L.; and Smirz, Jeffrey C., 4,318,866, Cl. 260-544.00D.
Smith, Addison M.: *See*—
Cunningham, William J.; Smith, Addison M.; and Wiles, Robert A., 4,319,060, Cl. 570-177.000.
Smith, Arthur A.: *See*—
Klievoneit, Harold R.; and Smith, Arthur A., 4,318,250, Cl. 51-134.000.
Smith, Brian J.; and Taylor, Geoffrey R., to Letraset International Limited. Transfer materials. 4,318,953, Cl. 428-200.000.
Smith, Donald B. Collapsible support structures. 4,318,527, Cl. 248-459.000.
Smith, George H., to Minnesota Mining and Manufacturing Company. Process of using photocopolymerizable compositions based on epoxy and hydroxyl-containing organic materials. 4,318,766, Cl. 156-330.000.
Smith, Glenn W., to Lieberman, Larry. Roof panel and hold down clip therefor. 4,318,261, Cl. 52-582.000.
Smith, Jerome J.: *See*—
Dorman, William H.; and Smith, Jerome J., 4,318,537, Cl. 269-302.100.
Smith, Leslie H., to Imperial Chemical Industries Limited. Alkanolamine derivatives. 4,318,921, Cl. 424-304.000.
Smith, Richard D. Treatment of cellulosic materials. 4,318,963, Cl. 428-537.000.
Smith, Robert H., to Atlantic Richfield Company. Converting low BTU gas to high BTU gas. 4,318,711, Cl. 48-197.00R.
Smith, Robert L. Building assembly with improved insulation characteristics. 4,318,257, Cl. 52-233.000.
Smith, Ronald E.: *See*—
Bush, John E.; Fenneman, David B.; and Smith, Ronald E., 4,319,201, Cl. 372-58.000.
Smith, Thomas E., to RCA Corporation. Video disc molding process. 4,318,877, Cl. 264-107.000.
Smithkline-Rit: *See*—
Lobmann, Michele; and Florent, Gerard, 4,318,903, Cl. 424-89.000.
Smiths Industries Limited: *See*—
Hedrick, Geoffrey S. M., 4,319,333, Cl. 364-565.000.
Smutny, Kurt: *See*—
Tappeiner, Hermann; Paessler, Ernst-Robert; Smutny, Kurt; and Krugel, Karl-Heinz, 4,319,224, Cl. 340-310.00R.
Sneider, Vincent R. Foldable nozzle syringe. 4,318,403, Cl. 128-232.000.
Sneider, Vincent R. Tampon and drug delivery device. 4,318,405, Cl. 128-263.000.
Snow, Jerry D., to TRW Inc. Process for depositing forging lubricant on titanium workpiece. 4,318,792, Cl. 204-181.00R.
Snyder, John A.; and Wechsler, Robert L., to PepsiCo, Inc. Plastic bottle. 4,318,489, Cl. 215-1.00C.
Socci, Fabrizio: *See*—
Pagani, Giorgio; and Socci, Fabrizio, 4,318,782, Cl. 203-12.000.
Societe Alsacienne de Constructions Mecaniques de Mulhouse: *See*—
Janousek, Rade, 4,319,235, Cl. 340-677.000.
Societe Anonyme D.B.A.: *See*—
Morin, Gerard, 4,318,627, Cl. 403-133.000.
Societe Anonyme de Recherches de Mecanique: *See*—
Monteillet, Denis, 4,318,308, Cl. 74-501.50R.
Societe Anonyme de Telecommunications: *See*—
Cointot, Denis F., 4,319,360, Cl. 375-27.000.
Societe Anonyme dite: Compagnie Generale d'Electricite: *See*—
Broussaud, Daniel, 4,318,876, Cl. 264-65.000.
Societe de Paris et du Rhone: *See*—
Mazzorana, Alfred B., 4,319,139, Cl. 290-38.00C.
Societe e'Etudes et de Recherches en Sources d'Energie Nouvelles: *See*—
Berger, Michel; Lys, Jacques; and Demaire, Georges, 4,318,968, Cl. 429-105.000.
Societe Francaise Hoechst: *See*—
Cabestany, Jean; Trouve, Claude; and Depernet, Dominique, 4,319,013, Cl. 526-287.000.
Sohier, Bernard, to Rhone-Poulenc Industries. Method for the treatment of an impure gas stream and apparatus therefor. 4,318,717, Cl. 55-71.000.
Solar Dental Co., Inc.: *See*—
Lokken, Oddvin, 4,318,742, Cl. 106-35.000.
Solie, Leland P., to Sperry Corporation. Temperature insensitive reflective array S.A.W. device. 4,319,154, Cl. 310-313.00D.
Solodovnikov, Sergei A.: *See*—
Kuchuk-Yatsenko, Sergei I.; Kazymov, Boris I.; Zagadarchuk, Vasily F.; Solodovnikov, Sergei A.; and Sakharnov, Vasily A., 4,319,117, Cl. 219-100.000.
Somma, Linda E.: *See*—
Peascoe, Warren J.; White, Woodrow W.; and Somma, Linda E., 4,319,014, Cl. 526-287.000.
Sopory, Umesh K., to Raychem Corporation. Method for annealing PTC compositions. 4,318,881, Cl. 264-346.000.
Sosin, Boleslaw M., to Marconi Company Limited, The. Power amplifiers. 4,319,198, Cl. 330-296.000.
Soubis, Jean P. Two-stroke motors producing better combustion and permitting a reduction of pollution. 4,318,373, Cl. 123-73.00R.
Soutsos, Michael D.: *See*—
Callanan, Robert F.; and Soutsos, Michael D., 4,318,426, Cl. 138-96.00T.
Specht, Theodore R.; and Morris, Robert D., to Westinghouse Electric Corp. Control windings for self-saturating electrical reactors. 4,319,183, Cl. 323-337.000.
Sperry Corporation: *See*—
Lee, Patrick S. K., 4,319,288, Cl. 360-46.000.
Solie, Leland P., 4,319,154, Cl. 310-313.00D.
Spielau, Paul; Kuhnel, Werner; Welsch, Dietmar; Klingberg, Gerd; Konermann, Hans E.; and Leeder, Wilfried, to Dynamit Nobel Aktiengesellschaft. Ternary thermoplastic molding composition containing ethylene-propylene copolymer. 4,319,001, Cl. 525-70.000.
Spielau, Paul; Kuhnel, Werner; Welsch, Dietmar; Klingberg, Gerd; Konermann, Hans E.; and Leeder, Wilfried, to Dynamit Nobel Aktiengesellschaft. Ternary thermoplastic molding composition containing polypropylene homopolymer. 4,319,004, Cl. 525-211.000.
Spielau, Paul; Kuhnel, Werner; Welsch, Dietmar; Klingberg, Gerd; Konermann, Hans E.; and Leeder, Wilfried, to Dynamit Nobel Aktiengesellschaft. Ternary thermoplastic molding composition containing polypropylene copolymers. 4,319,005, Cl. 525-240.000.
Spinnler, Ralph F.: *See*—
Stone, Frederick A.; Helm, Charles W.; and Spinnler, Ralph F., 4,319,240, Cl. 340-856.000.
Spitzner, Alexander, to VEB Applikationszentrum Elektronik Berlin. Device for the automated digital transcription and processing of quantities and units. 4,319,130, Cl. 235-310.000.
Spivack, John D.; Dexter, Martin; and Pastor, Stephen D., to Ciba-Geigy Corporation. Alkanolamine esters of 1,1'-biphenyl-2,2'-diyl- and alkylidene-1,1'-biphenyl-2,2'-diyl-cyclic phosphites. 4,318,845, Cl. 524-91.000.

Sprecker, Mark A.; and Hall, John B., to International Flavors & Fragrances Inc. Substituted tricyclodecane derivatives, processes for producing same and organoleptic uses thereof. 4,318,863, Cl. 260-463.000.

Spring, Carl E., to La Crosse Cooler Company. Vending machine with side delivery and cross conveyor. 4,318,496, Cl. 221-129.000.

Spring, David J.: *See—*
Rowsell, David G.; Spring, David J.; and Hems, Roger, 4,318,900, Cl. 424-54.000.

Springer, Edward M.: *See—*
Heyer, Arthur J.; Springer, Edward M.; and Clay, Wallace C., 4,319,253, Cl. 346-139.00C.

Stacey, John C. Shifting mechanism for outboard motors. 4,318,702, Cl. 440-75.000.

Stahler, Theo. Apparatus for the conversion of pollutants contained in effluents and effluent sludges. 4,318,810, Cl. 210-150.000.

Stamicarbon, B.V.: *See—*
van den Berg, Cornelis E. P. V., 4,319,010, Cl. 526-124.000.

Standard Oil Company, The: *See—*
Velenyi, Louis J.; Dolhyj, Serge R.; and Krupa, Andrew S., 4,319,066, Cl. 585-437.000.

Stanley Works, The: *See—*
Bobrowski, Louis G., 4,318,486, Cl. 211-87.000.

Stanly, Albert L.; and Wimmer, Gunther W., to Hyatt, Gilbert P. Arrangement for cardiac electrode implementation. 4,318,412, Cl. 128-696.000.

Stanuch, Edward S., to Federal Signal Corporation. Electrically synchronized rotating light system. 4,319,306, Cl. 362-35.000.

Stanulonis, John J.: *See—*
Lese, Henri K.; Sebulsky, Raynor T.; Stanulonis, John J.; Tabacek, Joseph A.; and Vogel, Roger F., 4,318,801, Cl. 208-216.00R.

Starikova, Olga F.: *See—*
Styskin, Evgeny L.; Gurvich, Yakov A.; Kumok, Simona T.; Starikova, Olga F.; Rutman, Grigory I.; Michurov, Jury I.; Yanshevsky, Vladimir A.; Gusev, Vladimir K.; and Liakumovich, Alexandr G., 4,319,052, Cl. 568-727.000.

Starr, Thomas J.: *See—*
Nelson, Richard E.; and Starr, Thomas J., 4,318,491, Cl. 220-1.00B.

Statton, Gary L.: *See—*
Babiec, John S., Jr.; and Statton, Gary L., 4,318,861, Cl. 260-453.0SP.

Stauffer Chemical Company: *See—*
Teach, Eugene G., 4,319,031, Cl. 548-200.000.

Steel, Margaret L.: *See—*
Gillett, John E.; Isherwood, John; Hann, Richard A.; Norton-Berry, Philip; and Steel, Margaret L., 4,318,941, Cl. 427-212.000.

Stegmeier, William J. Concrete deck water stop seal, deck form board, and method of applying finishing material to deck coping. 4,318,254, Cl. 52-169.700.

Stein, Robert G., to Abbott Laboratories. Ovicides. 4,318,920, Cl. 424-304.000.

Steinberg, Richard W.: *See—*
Promersberger, Jon M.; and Steinberg, Richard W., 4,318,638, Cl. 405-177.000.

Steinhage, Peter-Wilhelm, to Heimann GmbH. Target plate for thermal image conversion. 4,319,135, Cl. 250-332.000.

Stendel, Wilhelm: *See—*
Fuchs, Rainer; Naumann, Klaus; Riebel, Hans-Jochem; Behrenz, Wolfgang; Hammann, Ingeborg; and Stendel, Wilhelm, 4,318,922, Cl. 424-304.000.

Stephan, Wolfgang, to Biotest-Serum-Institut GmbH. Concentrated immunoglobulin solution suited for intravenous administration. 4,318,902, Cl. 424-85.000.

Stephens, Craig P., to Hughes Aircraft Company. CCD Capacitance modulation matrix for liquid crystal displays. 4,319,239, Cl. 340-784.000.

Stephens, William D.; and Ashmore, Charles I., to Atlantic Research Corporation. Solid propellant containing diferrocenyl ketone. 4,318,760, Cl. 149-19.200.

Stermole, Franklin J.: *See—*
MacCarthy, Patrick, 4,318,243, Cl. 46-61.000.

Sterrenberg, John W. Apparatus and method for utilizing hand-held power tool for shaking paint containers and the like. 4,318,622, Cl. 366-110.000.

Stevens & Bullivant Limited: *See—*
Thompson, Alfred J., 4,318,291, Cl. 72-306.000.

Stevens, Travis E.; and Wolfersberger, Martha H., to Rohm and Haas Company. Soil release on polyester textiles using cationic water soluble addition polymer. 4,318,956, Cl. 428-265.000.

Stewart, David G.: *See—*
Gane, Brian R.; and Stewart, David G., 4,319,056, Cl. 568-902.000.

Stewart, Robert E.: *See—*
Ermolovich, Thomas R.; Stewart, Robert E.; Leonard, Judson S.; and Cutler, David N., 4,319,323, Cl. 364-200.000.

Stiernspetz, Allan, to Datasaab AB. Device for sorting out individual articles which differ from the main quantity in a consecutive feedout. 4,318,484, Cl. 209-534.000.

Stillger, Friedel: *See—*
Knechtel, Wilhelm; and Stillger, Friedel, 4,318,609, Cl. 355-11.000.

Stiso, Sisto N.: *See—*
Falb, Richard D.; Stiso, Sisto N.; Wang, Yung-Chyung; White, William I.; and White-Stevens, Rodric H., 4,318,709, Cl. 23-230.00R.

Stockhausen, Dolf: *See—*
Nowak, Rudolf; Dahmen, Kurt; and Stockhausen, Dolf, 4,318,705, Cl. 8-436.000.

Stohr, Jean-Francois: *See—*
Bibring, Herve; Khan, Tasadduq; Rabinovitch, Maurice; Stohr, Jean-Francois; and Hauser, Jean-Michel, 4,318,756, Cl. 148-32.500.

Stoltman, Donald D., to General Motors Corporation. Carburetor. 4,318,869, Cl. 261-50.00R.

Stone, Frederick A.; Helm, Charles W.; and Spinnler, Ralph F., to Teleco Oilfield Services Inc. Electrical connector for borehole telemetry apparatus. 4,319,240, Cl. 340-856.000.

Stone, Karl E.: *See—*
Moss, David E.; Stone, Karl E.; Bright, Charles A., Jr.; and Rusch, Randy A., 4,318,936, Cl. 427-38.000.

Stone & Webster Engineering Corp.: *See—*
Woebcke, Herman N.; Bhojwani, Arju H.; Gartside, Robert J.; and Johnson, Axel R., 4,318,800, Cl. 208-127.000.

Stowell, Roger H.; Hirtle, Michael O.; Brown, Russell W.; and Moore, Arthur D., to Quaker Oats Company, The. Vocalizing apparatus. 4,318,245, Cl. 46-232.000.

Stratman, Victoria: *See—*
Meyer, Michael C.; Woods, Leodis V.; Underwood, James J.; Wilkinson, Ralph; and Stratman, Victoria, 4,318,994, Cl. 435-301.000.

Strauss, Georg: *See—*
Braun, Albert; Portz, Willi; and Strauss, Georg, 4,318,822, Cl. 252-189.000.

Streets, Roger L.; and Von Kamp, John, to Goodyear Tire & Rubber Company, The. Adhesive for wood and vinyl. 4,318,837, Cl. 524-364.000.

Strong, William A. Furnace for expanding mineral ores. 4,318,691, Cl. 432-58.000.

Stroud, Ronald. Belt fastener. 4,318,207, Cl. 24-163.00K.

Struck, Manfred: *See—*
Herchenbach, Paul; and Struck, Manfred, 4,318,630, Cl. 403-322.000.

Struver, Werner; Heller, Harold; and Lange, Peter M., to Bayer Aktiengesellschaft. Synthetic resins based on crosslinked copolymers of monovinyl and polyvinyl compounds. 4,319,015, Cl. 526-329.100.

Stuller, Howard E.: *See—*
Weatherly, Michael A., 4,318,523, Cl. 248-210.000.

Sturkey, William C., to Gaston County Dyeing Machine Company. Apparatus for wet processing of textile material in endless rope form. 4,318,286, Cl. 68-178.000.

Sturman, Martin F.: *See—*
Pilipski, Mark, 4,318,710, Cl. 44-1.00F.

Stussi, William E. Process of filling containers with a base food product and a topping. 4,318,935, Cl. 426-576.000.

Stutgens, Heribert: *See—*
Kohler, Klaus; Woditsch, Peter; Stutgens, Heribert; Bayer, Eckhard; Nollen, Klaus; and Sander, Hans, 4,318,843, Cl. 523-212.000.
Kohler, Klaus; Woditsch, Peter; Stutgens, Heribert; Bayer, Eckhard; Nollen, Klaus; and Sander, Hans, 4,318,844, Cl. 524-212.000.

Styskin, Evgeny L.; Gurvich, Yakov A.; Kumok, Simona T.; Starikova, Olga F.; Rutman, Grigory I.; Michurov, Jury I.; Yanshevsky, Vladimir A.; Gusev, Vladimir K.; and Liakumovich, Alexandr G. Method for preparing sterically hindered bis- or polyphenols. 4,319,052, Cl. 568-727.000.

Suenobu, Koreyoshi; Kaku, Eizaburo; and Miura, Takanori, to Yoshitomi Pharmaceutical Industries, Ltd. Trisphenol hydrate. 4,319,051, Cl. 568-720.000.

Sugalski, Raymond K., to General Electric Company. Charging system with multiple attachable cellholder modules. 4,319,178, Cl. 320-2.000.

Sugimoto, Yoshihide: *See—*
Naka, Hiromitsu; Miyashiro, Takeshi; and Sugimoto, Yoshihide, 4,318,951, Cl. 428-167.000.

Sujumura, Takeshi; Saito, Shozo; Saito, Takashi; and Hirakawa, Hiromasa, to Hitachi, Ltd. Apparatus for detecting failure of the nuclear fuel rod. 4,318,777, Cl. 376-253.000.

Sulzer Brothers Ltd.: *See—*
Seifert, Everhard, 4,318,428, Cl. 139-97.000.

Sumikin Coke Company Ltd.: *See—*
Tsuyuguchi, Michio; Kubo, Keiji; and Takahashi, Hiromichi, 4,318,779, Cl. 201-6.000.

Sumitomo Chemical Co., Ltd.: *See—*
Atsumi, Toshio; Takebayashi, Yoshiaki; Fukui, Masaru; and Yamamoto, Hisao, 4,318,925, Cl. 424-324.000.
Matsumoto, Genya; Sakai, Munetaka; Nakata, Shigeki; and Kawabata, Toshio, 4,319,044, Cl. 562-559.000.
Ohashi, Naohito; Nagata, Shoji; Ioshizumi, Kikuo; and Katsube, Junki, 4,319,040, Cl. 562-401.000.

Sumitomo Electric Industries: *See—*
Edahiro, Takao; Tanaka, Gotaro; Kuwahara, Toru; and Kyoto, Michihisa, 4,318,726, Cl. 65-18.200.

Sumitomo Metal Industries, Ltd.: *See—*
Hiroshima, Tatsuo; Sakamoto, Takahide; Matsui, Kenichi; and Ohgaki, Ichiroh, 4,318,439, Cl. 164-154.000.
Tsuyuguchi, Michio; Kubo, Keiji; and Takahashi, Hiromichi, 4,318,779, Cl. 201-6.000.

Sumitomo Metal Mining Company Limited: *See—*
Suzuki, Tohru, 4,319,348, Cl. 367-87.000.

Summers, Ian R.: *See—*
Martin, Michael C.; and Summers, Ian R., 4,319,081, Cl. 179-1.0MN.

Sunderland, Richard A., to Tektronix, Inc. Efficient power amplifier with staggered power supply voltages. 4,319,199, Cl. 330-297.000.

Sundstrand Corporation: *See*—
Bateman, Charles D., 4,319,218, Cl. 340-27.0AT.
Lang, David J., 4,318,304, Cl. 74-89.150.
Miller, Edwin K., 4,318,667, Cl. 415-121.00R.

Superior Electric Company, The: *See*—
Leenhouts, Albert C., 4,319,175, Cl. 318-696.000.

Surface Technology, Inc.: *See*—
Feldstein, Nathan, 4,318,940, Cl. 427-98.000.

Survant, Thomas G., to International Business Machines Corporation. Stepper motor load tuning. 4,318,625, Cl. 400-322.000.

Suvorov, Alexei V.: *See*—
Kulakov, Valery V.; Judin, Valentin P.; Pavlova, Antonina I.; Zlatkis, Anatoly M.; Bagrov, Georgy N.; Zverev, Ivan I.; Khazanov, Iosif I.; Suvorov, Alexei V.; Bobrinsky, Alexei A.; and Pasynkov, Vladimir A., 4,318,955, Cl. 428-235.000.

Suzuki, Nobuyoshi, to Olympus Optical Co., Ltd. Distributing nozzle with cooperating ionic detector. 4,318,884, Cl. 422-63.000.

Suzuki, Nobuyoshi; and Yoshinari, Shigeru, to Olympus Optical Co., Ltd. Liquid treating device for chemical analysis apparatus. 4,318,885, Cl. 422-68.000.

Suzuki, Tohru, to Sumitomo Metal Mining Company Limited. Method and apparatus of surveying nodular targets on the sea floor. 4,319,348, Cl. 367-87.000.

Svensson, Gustav E. W., to Basab Materialhantering Aktiebolag. Device for raising and transport of goods. 4,318,655, Cl. 414-434.000.

Sweeney, Stanley E.: *See*—
Orlick, Charles A.; deButts, Edward H.; Allabashi, John C.; and Sweeney, Stanley E., 4,318,270, Cl. 60-219.000.

Sweet, Edmund G. F., to Shaban Manufacturing Ltd. Housing for turbidimeter sensor. 4,319,138, Cl. 250-576.000.

Swenson, Evelyn M.: *See*—
Garwood, Gerald J.; and Swenson, Evelyn M., 4,319,090, Cl. 179-8.00A.

Swenson, Robert L., to Xerox Corporation. MFM Address mark encoding. 4,319,287, Cl. 360-40.000.

Sybron Corporation: *See*—
Fishbaugh, Warren D.; Batty, W. Lawson, Jr.; and Freedman, Frank J., 4,318,683, Cl. 425-429.000.

Syntex (U.S.A.) Inc.: *See*—
Nestor, John J.; Jones, Gordon H.; and Vickery, Brian H., 4,318,905, Cl. 424-177.000.

Syva Company: *See*—
Khanna, Pyare; and Ullman, Edwin F., 4,318,846, Cl. 260-112.00B.
Litman, David J.; Harel, Zvi; and Ullman, Edwin F., 4,318,707, Cl. 23-230.00B.

Szymanis, Edward, to Canadian General Electric Company Limited. Mulching lawn mower. 4,318,268, Cl. 56-255.000.

T. K. Valve Limited: *See*—
Calvert, Michael A., 4,318,420, Cl. 137-74.000.

Tabacek, Joseph A.: *See*—
Lese, Henri K.; Sebulsky, Raynor T.; Stanulonis, John J.; Tabacek, Joseph A.; and Vogel, Roger F., 4,318,801, Cl. 208-216.00R.

Tabanou, Jacques: *See*—
Chemali, Roland; and Tabanou, Jacques, 4,319,192, Cl. 324-375.000.

Tabb, David L.: *See*—
Magers, Thomas A.; and Tabb, David L., 4,318,984, Cl. 435-14.000.

Tadanier, John S.: *See*—
Martin, Jerry R.; Tadanier, John S.; and Collum, Paulette, 4,319,022, Cl. 536-17.00R.

Takagi, Katsuaki: *See*—
Nakamura, Hideo; Takagi, Katsuaki; and Funabashi, Tsuneo, 4,319,226, Cl. 340-347.0NT.

Takahashi, Atsushi: *See*—
Shingu, Shitta; Takahashi, Atsushi; and Kosugi, Isao, 4,318,332, Cl. 91-29.000.

Takahashi, Hiromichi: *See*—
Tsuyuguchi, Michio; Kubo, Keiji; and Takahashi, Hiromichi, 4,318,779, Cl. 201-6.000.

Takamizawa, Kinya: *See*—
Iinuma, Kazuhiro; and Takamizawa, Kinya, 4,318,413, Cl. 128-660.000.

Takano, Rikuo: *See*—
Kotani, Shintaro; Abiko, Ichimatsu; Takano, Rikuo; Hoshino, Yasushi; Tokunaga, Yukio; and Tateishi, Kazuyoshi, 4,318,597, Cl. 354-5.000.

Takano, Tadashi; Mizusawa, Motoo; Betsudan, Shinichi; and Sato, Shigeru, to Nippon Telegraph & Telephone Public Corp.; and Mitsubishi Denki Kabushiki Kaisha. Offset dual-reflector aerial having tapered reflector segments in main reflector. 4,319,250, Cl. 343-781.0CA.

Takashi, Masanori; and Yoshiyasu, Mitsuo, to Mitsubishi Petrochemical Co., Ltd. Synthetic papers and method of making the same. 4,318,950, Cl. 428-143.000.

Takayama, Tsuneo; and Tonomura, Yoshinobu, to Janome Sewing Machine Co., Ltd. Pattern generator for electronic sewing machines. 4,318,359, Cl. 112-158.00E.

Takebayashi, Yoshiaki: *See*—
Atsumi, Toshio; Takebayashi, Yoshiaki; Fukui, Masaru; and Yamamoto, Hisao, 4,318,925, Cl. 424-324.000.

Takena Industries, Inc.: *See*—
Fitzjarrell, Gerald M., 4,318,566, Cl. 296-1.00S.

Takenouchi, Mutsuo: *See*—
Ozawa, Takashi; Takenouchi, Mutsuo; Sekimoto, Souichi; and Kikuchi, Yoshiki, 4,319,283, Cl. 358-286.000.

Takeshita, Isamu: *See*—
Gunjima, Tomoki; and Takeshita, Isamu, 4,318,785, Cl. 204-98.000.

Takeuchi, Tomio: *See*—
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; and Inui, Taiji, 4,318,847, Cl. 260-112.50R.

Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Sound motion picture camera. 4,318,596, Cl. 352-14.000.

Tallody, Alexander, to AMF Incorporated. Dual in-line programming slide switch. 4,319,100, Cl. 200-16.00R.

Tamura, Humio: *See*—
Enomoto, Satoru; Asano, Kiro; Tamura, Humio; and Tanaka, Hiromitsu, 4,318,908, Cl. 424-243.000.

Tanabe, Takeshi; Nakagawa, Hideshi; and Fujihara, Takeshi, to Sharp Kabushiki Kaisha. Microwave oven employing a gas sensor. 4,319,110, Cl. 219-10.55B.

Tanaka, Akio, to Zenith Radio Corporation. Vertical synchronization detection system and method. 4,319,275, Cl. 358-154.000.

Tanaka, Gotaro: *See*—
Edahiro, Takao; Tanaka, Gotaro; Kuwahara, Toru; and Kyoto, Michihisa, 4,318,726, Cl. 65-18.200.

Tanaka, Hiromitsu: *See*—
Enomoto, Satoru; Asano, Kiro; Tamura, Humio; and Tanaka, Hiromitsu, 4,318,908, Cl. 424-243.000.

Tanaka, Kazuo, to Canon Kabushiki Kaisha. Lens system with attachment lens removably attached. 4,318,592, Cl. 350-427.000.

Tanaka, Kazuo: *See*—
Tsuji, Sadahiko; Hirata, Noritsugu; and Tanaka, Kazuo, 4,318,593, Cl. 350-430.000.

Tanaka, Kyugo: *See*—
Yamamoto, Fumihiko; Katayose, Mitsuru; Tanaka, Kyugo; and Misumi, Teruyuki, 4,318,850, Cl. 260-152.000.

Taniguchi, Kazuhiro: *See*—
Ando, Masato; Yamamoto, Kenji; and Taniguchi, Kazuhiro, 4,318,793, Cl. 204-198.000.

Tanimoto, Kiyoji: *See*—
Nakanishi, Mikimaro; and Tanimoto, Kiyoji, 4,318,422, Cl. 137-246.000.

Tano, Tetsuo: *See*—
Sekiguchi, Shizuo; Tano, Tetsuo; Kitano, Kyozo; and Ogoshi, Toshiaki, 4,318,823, Cl. 252-353.000.

Tappeiner, Hermann; Paessler, Ernst-Robert; Smutny, Kurt; and Krugel, Karl-Heinz, to Siemens Aktiengesellschaft. Powerline carrier control system with powerline current compensation. 4,319,224, Cl. 340-310.00R.

Tartaglia, John A. Tweezer forceps. 4,318,313, Cl. 81-43.000.

Tarutani, Yoshinobu; Yamada, Hirozi; and Kawabe, Ushio, to Hitachi, Ltd. Josephson junction element. 4,319,256, Cl. 357-5.000.

Tarvin, Robert F.: *See*—
Coscia, Anthony T.; Tarvin, Robert F.; and Bardoliwalla, Dinshaw F., 4,319,020, Cl. 528-405.000.

Tasch, Al F., Jr.; and Fu, Horng-Sen, to Texas Instruments Incorporated. Multilevel interconnect system for high density silicon gate field effect transistors. 4,319,260, Cl. 357-23.000.

Tateishi, Kazuyoshi: *See*—
Kotani, Shintaro; Abiko, Ichimatsu; Takano, Rikuo; Hoshino, Yasushi; Tokunaga, Yukio; and Tateishi, Kazuyoshi, 4,318,597, Cl. 354-5.000.

Taube, Max. Remotely controlled self-propelled power lawn mower. 4,318,266, Cl. 56-10.200.

Tawara, Ikuo, to Olympus Optical Co., Ltd. Endoscope ocular accessory mounting device. 4,318,395, Cl. 128-4.000.

Taylor, Geoffrey R.: *See*—
Smith, Brian J.; and Taylor, Geoffrey R., 4,318,953, Cl. 428-200.000.

Taylor, Raymond C.: *See*—
Richards, Frank P.; and Taylor, Raymond C., 4,318,703, Cl. 493-149.000.

TDK Electronics Co., Ltd.: *See*—
Horimoto, Rioichi; and Seike, Riyuuzou, 4,318,757, Cl. 148-105.000.
Ide, Tosiaki; Watanabe, Akio; and Uehori, Tatsuo, 4,318,961, Cl. 428-425.900.

Teach, Eugene G., to Stauffer Chemical Company. Substituted thiazolidines. 4,319,031, Cl. 548-200.000.

Technical Research Centre of Finland: *See*—
Aaltonen, Olli; and Alkio, Martti, 4,319,023, Cl. 536-57.000.

Tektronix, Inc.: *See*—
Sunderland, Richard A., 4,319,199, Cl. 330-297.000.

Teldix G.m.b.H.: *See*—
Klotz, Hermann, 4,319,151, Cl. 310-152.000.

Teleco Oilfield Services Inc.: *See*—
Stone, Frederick A.; Helm, Charles W.; and Spinnler, Ralph F., 4,319,240, Cl. 340-856.000.

Tepic, Slobodan, to Massachusetts Institute of Technology. Compliant head femoral endoprosthesis. 4,318,191, Cl. 3-1.913.

Terui, Nobuhiko: *See*—
Daitoku, Koichi; Sakamoto, Hatsuo; Terui, Nobuhiko; Hozumi, Toshiaki; Sekine, Yoshio; Hyodo, Yukio; Ichikawa, Masanori; Wada, Masamichi; Kudo, Tsuyoshi; Nakamura, Manabu; Nakanishi, Nobuaki; Komai, Takeo; and Matsuzawa, Yoshio, 4,318,603, Cl. 354-214.000.

Terwilliger, Curtis G., to Cromemco Inc. Multi-passband differentially controlled data rate synchronizer. 4,319,200, Cl. 331-8.000.

Texaco Inc.: *See*—
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Schievelbein, Vernon H., 4,318,816, Cl. 252-8.55D.
Tyler, Timothy N., 4,318,815, Cl. 252-8.55D.
Texas Instruments Incorporated: *See—*
Rao, G. R. Mohan, 4,319,263, Cl. 357-41.000.
Shu, Jing S.; Lee, Wei; Varnell, Gilbert L.; and Bartelt, John L., 4,318,976, Cl. 430-287.000.
Tasch, Al F., Jr.; and Fu, Horng-Sen, 4,319,260, Cl. 357-23.000.
Wiggins, Richard H.; and Henderson, Alva E., 4,319,083, Cl. 179-1.0SA.
Thermal Dynamics Corporation: *See—*
Johansson, Rune L., 4,319,124, Cl. 219-130.210.
Thiokol Corporation: *See—*
Doukakis, Harry W.; and Black, Robert E., Jr., 4,318,271, Cl. 60-232.000.
Thomas, Howard W.: *See—*
Erickson, Allen O.; and Thomas, Howard W., 4,318,662, Cl. 414-686.000.
Thomas, Norman S., to Sheridan Contractors (Engineering) Limited. Tunnel lining, segment therefore and method of lining a tunnel. 4,318,636, Cl. 405-153.000.
Thomassen & Drijver-Verblifa NV: *See—*
Veenstra, Jelle, 4,318,943, Cl. 427-240.000.
Thome, William L.; and Schmall, Robert A., to Midland-Ross Corporation. Plate quench. 4,318,534, Cl. 266-113.000.
Thompson, Alfred J., to Stevens & Bullivant Limited. Tube end forming apparatus. 4,318,291, Cl. 72-306.000.
Thompson, David A.: *See—*
Cullum, Clifton D., Jr.; Thompson, David A.; and Worthington, Thomas K., 4,319,189, Cl. 324-208.000.
Thompson, Donald G.: *See—*
Cense, Adriaan; Gander, Maurice C.; and Thompson, Donald G., 4,319,276, Cl. 358-158.000.
Thompson, James L. E., to Northern Telecom Limited. Voice switch for hands free communication apparatus. 4,319,086, Cl. 179-1.0HF.
Thomson, Alan R.; Miles, Brynley J.; Caygill, John C.; and Moore, David J., to United Kingdom Atomic Energy Authority. Separation of proteases from fluids. 4,318,990, Cl. 435-219.000.
Thomson-CSF: *See—*
de Bayser, Pierre; Fraise, Pierre; and Le Nohaic, Yves, 4,319,208, Cl. 333-204.000.
Thopsey, Floyd; and De Panfilis, Anthony J. Mail arrival flag system. 4,318,507, Cl. 232-35.000.
Thorn, John E., to Ford Motor Company. Inhibition of charge accumulation. 4,319,303, Cl. 361-215.000.
Thornhill, John R. Lighter with integral pipe tamper. 4,318,416, Cl. 131-243.000.
Threshold Technology Inc.: *See—*
Welch, John R.; and Herscher, Marvin B., 4,319,085, Cl. 179-1.0SD.
Thyssengas GmbH: *See—*
Flockenhaus, Claus; and Hackler, Erich, 4,318,997, Cl. 518-704.000.
Tien, Ping K., to Bell Telephone Laboratories, Incorporated. Heterojunction semiconductor laser fabrication utilizing laser radiation. 4,318,752, Cl. 148-1.500.
TII Industries, Inc.: *See—*
Napiorkowski, John; Jones, Raymond D.; Fukushima, Toshitaka; Koyama, Kazumi; Ueno, Kouji; Miyamura, Tamio; and Kawabata, Yuichi, 4,319,300, Cl. 361-119.000.
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Titus, Theodore, IV: *See—*
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Toda Kogyo Corp.: *See—*
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Toki, Kaoru: *See—*
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Tokico, Ltd.: *See—*
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Kotani, Shintaro; Abiko, Ichimatsu; Takano, Rikuo; Hoshino, Yasushi; Tokunaga, Yukio; and Tateishi, Kazuyoshi, 4,318,597, Cl. 354-5.000.
Tokyo Ohka Kogyo Kabushiki Kaisha: *See—*
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Nakamura, Yasushi; Ohtombe, Ko; and Nishito, Akihiro, 4,319,137, Cl. 250-556.000.
Shingu, Shitta; Takahashi, Atsushi; and Kosugi, Isao, 4,318,332, Cl. 91-29.000.
Tomabechi, Hideo, to Olympus Optical Co., Ltd. Head adjusting mechanism. 4,319,293, Cl. 360-105.000.
Tomizawa, Yasumichi: *See—*
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Tomoe Technical Research Company: *See—*
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Tompkins, Gene A., to Aqua-Chem, Inc. Economizer. 4,318,366, Cl. 122-20.00B.
Tompkins, Raymond E., to Libbey-Owens-Ford Company. Grasping apparatus for handling heated articles. 4,318,562, Cl. 294-88.000.
Tonomura, Yoshinobu: *See—*
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Toray Industries, Inc.: *See—*
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Toups, Daniel J. Digital chord display for stringed musical instruments. 4,318,327, Cl. 84-477.00R.
Tournier, Claude. Process for peeling off inner protective tissue of animal oesophagus. 4,318,205, Cl. 17-45.000.
Towae, Friedrich: *See—*
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Toyama, Seiji: *See—*
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Toyo Seikan Kaisha, Ltd.: *See—*
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Kurobe, Moriji; Tsuji, Ryusuke; Imao, Eiichi; Masuyama, Takayuki; Nagata, Eizi; and Kamada, Kazunori, 4,319,016, Cl. 528-127.000.
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Tracer Control Company: *See—*
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Trenary, Dale T.; Frederick, Allen H.; and Whelton, Robert M., to Data General Corporation. Retro-etch process for integrated circuits. 4,318,759, Cl. 148-187.000.
Trotter, George H. Arrow retainer. 4,318,390, Cl. 124-41.00A.
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Trummer, James R., to Keuffel & Esser Company. ECG Amplifier overload control. 4,319,197, Cl. 330-11.000.
Truswal Systems Corporation: *See—*
Gore, Charles E., 4,318,652, Cl. 411-468.000.
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Snow, Jerry D., 4,318,792, Cl. 204-181.00R.
Yaste, Ruth E.; and Budrow, Russell B., 4,319,074, Cl. 174-116.000.
Trybulski, Eugene J., to Hoffmann-La Roche Inc. Intermediates in the production of 2-benzazepines. 4,318,854, Cl. 260-326.00A.
Tsai, Allan K. S.; Lennox, Duncan D.; and Brewer, Arthur D., to Uniroyal Ltd. Method of making certain 2,3-dihydro-1,4-dithiins. 4,319,033, Cl. 549-15.000.
Tsang, Gee. Contamination control boom arrangement. 4,318,633, Cl. 405-63.000.
Tsuda, Hiroshi; Miyashita, Kiyoshi; Nishikawa, Masaji; Shimizu, Akira; and Kasuga, Muneo, to Olympus Optical Company Limited. Document feed control in an electrophotographic system. 4,318,611, Cl. 355-14.0SH.
Tsugawa, Shunichi: *See—*
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Tsuji, Sadahiko; Hirata, Noritsugu; and Tanaka, Kazuo, to Canon Kabushiki Kaisha. Zoom lens assembly with two movable focusing lens groups. 4,318,593, Cl. 350-430.000.
Tsukada, Ziro: *See—*
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Tsuyuguchi, Michio; Kubo, Keiji; and Takahashi, Hiromichi, to Sumikin Coke Company Ltd.; and Sumitomo Metal Industries Limited. Method of manufacture of blast furnace cokes containing substantial amounts of low grade coals. 4,318,779, Cl. 201-6.000.
Tudberry, Ronald O., to International Computers Limited. Electrical connection system interlock. 4,318,579, Cl. 339-74.00R.
Tufano, Michael D.: *See—*
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Tulleners, Harry W., to Midland-Ross Corporation. Power factor compensating electroluminescent lamp DC/AC inverter. 4,319,164, Cl. 315-219.000.
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Turner, Samuel. Illuminated handlebar. 4,319,307, Cl. 362-72.000.
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Twaddell, Victor A.: *See*—
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Tyan, Yuan-Sheng, to Eastman Kodak Company. Semiconductor devices having improved low-resistance contacts to p-type CdTe, and method of preparation. 4,319,069, Cl. 136-258.000.
Tyler, Timothy N., to Texaco Inc. Sulfated biopolymers for use in recovering petroleum from a subterranean formation. 4,318,815, Cl. 252-8.55D.
Uchida, Yoritoshi, to Omron Tateisi Electronics Co. Electronic cash register system with consolidating means. 4,319,326, Cl. 364-405.000.
Uchino, Shoichi: *See*—
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Uchiyama, Haruo: *See*—
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Ueda, Hiroshi; and Oyokota, Shigeru, to Minolta Camera Kabushiki Kaisha. Electromagnetically driven device. 4,319,211, Cl. 335-229.000.
Uehara, Akira: *See*—
Hijikata, Isamu; Uehara, Akira; and Nakane, Hisashi, 4,318,767, Cl. 156-345.000.
Uehara, Tsutomu. Bar positioning member and its forming apparatus. 4,318,262, Cl. 52-687.000.
Uehori, Tatsuo: *See*—
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Uemura, Tamio; Ito, Yoshimasa; and Ikeda, Junichi, to Tokico, Ltd. Cloth feeder for sewing machine. 4,318,360, Cl. 112-318.000.
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Ullrich, Martin; and Gemperlein, Heinz, to Bayer Aktiengesellschaft. Small volume outlet apparatus with a sieve changing device for multiple shaft screw machines. 4,318,677, Cl. 425-183.000.
Ullrich, Martin; Hederich, Manfred; and Jerchel, Karl-Friedrich, to Bayer Aktiengesellschaft. Process for the concentration of solutions with simultaneous setting. 4,318,773, Cl. 159-47.00R.
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; and Inui, Taiji, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Physiologically active tetrapeptides. 4,318,847, Cl. 260-112.50R.
Underwood, James J.: *See*—
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Union Carbide Corporation: *See*—
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Union Tank Car Company: *See*—
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Uniroyal, Inc.: *See*—
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United Air Specialists, Inc.: *See*—
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United Kingdom of Great Britain and Northern Ireland, The Minister of Transport in Her Britannic Majesty's Government of the: *See*—
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U.S. Philips Corporation: *See*—
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Janssen, Jozef T. A., 4,318,538, Cl. 269-324.000.
Jenner, Michael D.; and Blackman, Maurice V., 4,318,217, Cl. 29-572.000.
Looye, Bob; deHair, Johannes T. W.; and Bakker, Cornelis, 4,319,161, Cl. 313-486.000.
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Videc, Bernard P., 4,318,957, Cl. 428-295.000.
United Technologies Corporation: *See*—
Anderson, Ralph E., Jr.; and Hughes, Scott E., 4,318,753, Cl. 148-3.000.
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Goldstein, Richard J., 4,318,393, Cl. 126-438.000.
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UOP Inc.: *See*—
Antos, George J., 4,318,827, Cl. 252-462.000.
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Kulprathipanja, Santi; and Neuzil, Richard W., 4,319,058, Cl. 568-917.000.
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Malloy, Thomas P.; and Tufano, Michael D., 4,318,820, Cl. 252-184.000.
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Upjohn Company, The: *See*—
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Usui, Keizaburo: *See*—
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Utsumi, Masatoki; Ohi, Nobuo; Kishiue, Yasuhiro; and Nose, Kazumi, to Ichikawa Woolen Textile Co., Ltd. Discharge wire cleaning device for an electric dust collector. 4,318,718, Cl. 55-121.000.
Utzerath, James. Line segment video display apparatus. 4,319,339, Cl. 364-900.000.
Vacek, Lubomir, to Sherwin-Williams Company, The. Preparation of 1,2 diaminobenzene by high pressure acid hydrolysis of benzemidazolone. 4,319,046, Cl. 564-413.000.
Vachenauer, Erwin; Wagner, Gerhard; and Mueller, Bernd, to Siemens Aktiengesellschaft. Airport-surveillance system. 4,319,243, Cl. 343-6.50R.
Vaillancourt, Vincent L., to Critikon, Inc. Liquid infusion catheter assembly. 4,318,402, Cl. 128-214.400.
Van Benthuysen, John D.; and Osburn, Carlton M., to CTS Corporation. Process for producing an on-off push switch and resulting article. 4,318,221, Cl. 29-622.000.
Van Cleave, Stephen W.; Hank, Sam T.; and Deming, Andrew F., to Alliance Manufacturing Company, Inc., The. Multi-pole switch. 4,319,102, Cl. 200-46.000.

van den Berg, Cornelis E. P. V., to Stamicarbon, B.V. Process for the polymerization of alkenes. 4,319,010, Cl. 526-124.000.

van den Enden, Adrianus W. M.; and van Mil, Job F. P., to U.S. Philips Corporation. Current detection circuit arrangement for an automatic telephone exchange. 4,319,092, Cl. 179-18.0FA.

van den Goor, Jacobus M.: *See—*
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van de Polder, Leendert J.: *See—*
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van der Drift, Johannes K.: *See—*
Heitman, Herwarth; van der Drift, Johannes K.; Leenderts, Everardus J. A. M.; and Grootveld, Herman H., 4,318,852, Cl. 260-239.100.

Van der Kolk, Herbert C.; and Davy, Martyn W., to Hirst Contact Lens Limited. Contact lens and method of making the same. 4,318,595, Cl. 351-160.00H.

van der Lely, Ary; and Bom, Cornelis J. G., to C. van der Lely N.V. Shear pin coupling. 4,318,284, Cl. 64-28.00R.

van der Scheer, Derk; and Bosch, Hendrik A., to Hazemeijer B.V. Current limiting switch capable of rapid circuit breaking. 4,319,210, Cl. 335-16.000.

van Dommelen, Joannes H. J.: *See—*
Derks, Petrus J. A. M.; van Dommelen, Joannes H. J.; and Dieleman, Jan, 4,319,159, Cl. 313-386.000.

van Gils, Adrianus W. Laminated winding for electric machines. 4,319,152, Cl. 310-201.000.

Van Grinsven, Petrus F. A.; and Post, Martin F. M., to Shell Oil Company. Process for the purification of hydrocarbons. 4,318,802, Cl. 208-245.000.

van Kasteren, Adrianus C.: *See—*
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VanManen, Dick T., to Voplex Corporation. Method of extrusion/injection molding of trimmed product. 4,318,764, Cl. 156-244.110.

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Varis, Pauli; and Halkola, Juhani, to Hollming Oy. Double conic coupling apparatus. 4,318,463, Cl. 192-85.0AB.

Varnell, Gilbert L.: *See—*
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Veb Kombinat Polygraph "Werner Lamberz" Leipzig: *See—*
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Veenstra, Jelle, to Thomassen & Drijver-Verblifa NV. Apparatus for at least partly removing adhering liquid from and/or evenly distributing liquid over the surface of articles. 4,318,943, Cl. 427-240.000.

Veldhoven, Gerardus A.: *See—*
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Velenyi, Louis J.; Dolhyj, Serge R.; and Krupa, Andrew S., to Standard Oil Company, The. Preparation of alkenyl aromatic compounds. 4,319,066, Cl. 585-437.000.

Venture Technology, Inc.: *See—*
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Vergnault, Joel: *See—*
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Verheyden, Gerardus M. C., to Heattreatment Advising Company N.V. Reinforced ceramic fiber panel for oven walls. 4,318,259, Cl. 52-404.000.

Ver Strate, Gary; and Baldwin, Francis P., to Exxon Research and Engineering Co. Low molecular weight terminally-functional saturated hydrocarbon polymer. 4,319,061, Cl. 570-191.000.

Vibra-King, Inc.: *See—*
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Vickers, Richard R. Texturing broom apparatus for roadway pavements. 4,318,631, Cl. 404-93.000.

Vickery, Brian H.: *See—*
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Victor Company of Japan, Ltd.: *See—*
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Victor United, Inc.: *See—*
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Videc, Bernard P., to U.S. Philips Corporation. Carrier foil for a magnetic recording tape, and method of manufacturing same. 4,318,957, Cl. 428-295.000.

Videocolor, S.A.: *See—*
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Vidonne, Jean P.: *See—*
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Vize, Robert M., to Caterpillar Tractor Co. Automatic brake control for tilting operator cab. 4,318,571, Cl. 303-71.000.

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Vollendorf, Howard A. Pool table conversion inserts. 4,318,543, Cl. 273-4.00A.

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Vonderwahl, Rodolphe: *See—*
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Von Kohorn, Henry. Heap leaching device. 4,318,892, Cl. 422-279.000.

Voorhees, John E.; and Mathieu, Raymond J., to Hobart Corporation. Slave blade scrapers for a band saw. 4,318,323, Cl. 83-168.000.

Voplex Corporation: *See—*
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W. H. Brine Company: *See—*
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W. R. Grace & Co.: *See—*
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Waaben, Sigurd G.: *See—*
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Wachs, Edward H.; and Kwech, Horst, to E. H. Wachs Company, The. Pile-cutting machine and method of cutting multi-sided piles. 4,318,391, Cl. 125-14.000.

Wada, Masamichi: *See—*
Daitoku, Koichi; Sakamoto, Hatsuo; Terui, Nobuhiko; Hozumi, Toshiaki; Sekine, Yoshio; Hyodo, Yukio; Ichikawa, Masanori; Wada, Masamichi; Kudo, Tsuyoshi; Nakamura, Manabu; Nakanishi, Nobuaki; Komai, Takeo; and Matsuzawa, Yoshio, 4,318,603, Cl. 354-214.000.

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Wallace Murray Corporation: *See—*
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Ward, Geoffrey A. Float controlled syphon valve for swimming pool cover. 4,318,421, Cl. 137-135.000.

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Ward, William J., III: *See—*
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Warren, Kenneth A. J., to Marconi Company Limited, The. Target detecting apparatus equipped with testing device for simulating targets at different ranges. 4,319,247, Cl. 343-17.700.

Washburn, James R. Ratchet wrench with return socket. 4,318,315, Cl. 81-58.200.

Watanabe, Akio: *See*—
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Watanabe, Keiji; Saito, Masato; and Fukuyama, Keiji, to Mitsubishi Denki Kabushiki Kaisha. Electrode for discharge lamp. 4,319,158, Cl. 313-346.00R.

Watanabe, Yasuhiko, to Brother Kogyo Kabushiki Kaisha. Tapping machine. 4,318,646, Cl. 408-6.000.

Watkins, Richard K.: *See*—
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Watson, Thomas H., to Pullman Incorporated. Shiftable particle spheroidal side bearing. 4,318,347, Cl. 105-199.0CB.

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Watts, David E.: *See*—
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Weatherly, Michael A., to Stuller, Howard E. Removable utility support device for ladder. 4,318,523, Cl. 248-210.000.

Webb, Jimmy L.; and Phipps, Donald L., to General Electric Company. Method for making aromatic bis (ether anhydrides). 4,318,857, Cl. 260-346.300.

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Weber, Otto K., to Sensor Technology, Inc. Optical encoder. 4,319,134, Cl. 250-231.0SE.

Weberg, Wallace. Netting applicator. 4,318,514, Cl. 242-86.520.

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Wechsler, Robert L.: *See*—
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Welch, Jan. Supporting device. 4,318,525, Cl. 248-228.000.

Welch, John R.; and Herscher, Marvin B., to Threshold Technology Inc. Speech recognition apparatus and method. 4,319,085, Cl. 179-1.0SD.

Weldon, James O.; and Sainton, Joseph B., to Continental Electronics Mfg. Co. Phase modulated square wave generator. 4,319,204, Cl. 332-9.00R.

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Wennerstrom, Arthur J., to United States of America, Air Force. Vane configuration for fluid wake re-energization. 4,318,669, Cl. 415-119.000.

Wenstadt, Thomas D.; and Chmielewski, Cary J., to Brunswick Corporation. Trim control. 4,318,699, Cl. 440-1.000.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See*—
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Western Electric Co. Incorporated: *See*—
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White, Woodrow W.: *See*—
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Wiezer, Hartmut; Pfahler, Gerhard; Haberlein, Harald; and Nowy, Gunther, to Hoechst Aktiengesellschaft. Alkylated diaza-spirodecanes. 4,319,030, Cl. 546-19.000.

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Wilkinson Sword Limited: *See*—
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Willette, Albert D., to AMP Inc. Sealed routing of undercarpet cable. 4,319,075, Cl. 174-117.0FF.
Williams, Jack D.; and Banasky, Howard V. Ventilated toilet. 4,318,192, Cl. 4-213.000.
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Winkler, Otto, to Balzers Aktiengesellschaft. High vacuum valve having a metal-to-metal sealing joint. 4,318,532, Cl. 251-334.000.
Wires, Charles J., Sr., to Will-Burt Company, The. Power driven equipment safety device. 4,319,146, Cl. 307-328.000.
Witschard, Gilbert, to Hooker Chemicals & Plastics Corp. Vinyl halide polymer blends of enhanced impact resistance. 4,319,002, Cl. 525-71.000.
Woditsch, Peter: *See*—
Kohler, Klaus; Woditsch, Peter; Stutgens, Heribert; Bayer, Eckhard; Nollen, Klaus; and Sander, Hans, 4,318,843, Cl. 523-212.000.
Kohler, Klaus; Woditsch, Peter; Stutgens, Heribert; Bayer, Eckhard; Nollen, Klaus; and Sander, Hans, 4,318,844, Cl. 524-212.000.
Woebcke, Herman N.; Bhojwani, Arju H.; Gartside, Robert J.; and Johnson, Axel R., to Stone & Webster Engineering Corp. Thermal regenerative cracking (TRC) process. 4,318,800, Cl. 208-127.000.
Woerner, Lloyd M.; and Moore, Edward B., to J. C. Schumacher Company. Process for producing polycrystalline silicon. 4,318,942, Cl. 427-213.000.
Wolf, Irving: *See*—
Scott, Lawrence M.; Wolf, Irving; and Lee, Yu C., 4,318,734, Cl. 75-0.5BA.
Wolf, Roger E., to RCA Corporation. Radio transmitter energy recovery system. 4,319,359, Cl. 375-22.000.
Wolfersberger, Martha H.: *See*—
Stevens, Travis E.; and Wolfersberger, Martha H., 4,318,956, Cl. 428-265.000.
Wollard Aircraft Equipment, Inc.: *See*—
Drozd, Otto, 4,318,197, Cl. 14-71.500.
Drozd, Otto, 4,318,198, Cl. 14-71.500.
Wonder Corporation of America: *See*—
Benoit, Raymond A., 4,319,309, Cl. 362-108.000.
Wong, Ching-Ping, to Western Electric Co., Incorporated. Stabilized catalyzed organopolysiloxanes. 4,318,939, Cl. 427-96.000.
Wood, Arthur A., to Replicap Products, Inc. Reusable sanitary dust cap for a beverage tank valve. 4,318,495, Cl. 220-375.000.
Wood, Prentice J.; and Watkins, Richard K., to Mead Corporation, The. Article carrier. 4,318,476, Cl. 206-459.000.
Woods, Lee O.; and Haag, Donald L., to General Electric Company. Combination starter-protector device, apparatus utilizing such device, and methods of assembling. 4,319,299, Cl. 361-24.000.
Woods, Leodis V.: *See*—
Meyer, Michael C.; Woods, Leodis V.; Underwood, James J.; Wilkinson, Ralph; and Stratman, Victoria, 4,318,994, Cl. 435-301.000.
Woodward, Robert B.; and Bickel, Hans, to Ciba-Geigy Corporation. Process for the manufacture of ceohem enol derivatives. 4,319,027, Cl. 544-016.000.
Woon, Lin-Sun, to Kimberly-Clark Corporation. Folded tampon pledget. 4,318,407, Cl. 128-285.000.
Worrix, Matthew L.: *See*—
Lott, Donald L.; Schockelt, Guenter G.; and Worrix, Matthew L., 4,319,105, Cl. 200-148.00A.
Worthington, Thomas K.: *See*—
Cullum, Clifton D., Jr.; Thompson, David A.; and Worthington, Thomas K., 4,319,189, Cl. 324-208.000.
Wrathall, Robert S., to Motorola, Inc. Solid state current sensing circuit. 4,319,181, Cl. 323-315.000.
Wright, Paul E.: *See*—
Newbould, John; Cosentino, Angelo J.; and Wright, Paul E., 4,318,839, Cl. 524-538.000.
Wygant, N. D., to Marathon Oil Company. Programmable time control apparatus. 4,319,319, Cl. 364-104.000.
Xerox Corporation: *See*—
Bonham, Robert D.; and Fantuzzo, Joseph, 4,318,607, Cl. 355-3.0DD.
Brown, George A.; Relyea, Lloyd A.; Scharfe, Merlin E.; and Pinsler, Heinz W., 4,318,973, Cl. 430-31.000.
Grace, Robert E., 4,318,610, Cl. 355-14.00D.
Hardenbrook, James M., 4,318,972, Cl. 430-31.000.
Minerd, Timothy M., 4,319,285, Cl. 358-300.000.
Pacansky, Thomas J.; Gruber, Robert J.; and Knapp, John F., 4,318,974, Cl. 430-108.000.
Swenson, Robert L., 4,319,287, Cl. 360-40.000.
Yabe, Ryohei: *See*—
Sagusa, Hisayuki; Hashimoto, Hiroshi; Nomura, Yasushi; Satou, Takehide; and Yabe, Ryohei, 4,318,615, Cl. 356-320.000.
Yamabe, Masaaki; Munekata, Seiji; and Kumai, Seisaku, to Asahi Glass Company, Ltd. Process for producing difluoroiodoacetyl fluoride. 4,318,867, Cl. 260-544.00F.
Yamada, Hirozi: *See*—
Tarutani, Yoshinobu; Yamada, Hirozi; and Kawabe, Ushio, 4,319,256, Cl. 357-5.000.
Yamada, Mitsuhiko, to Dainippon Screen Seizo Kabushiki Kaisha. Reproduction picture sharpness emphasizing method. 4,319,268, Cl. 358-75.000.
Yamada, Shigeru; and Ikeda, Tadao, to Dainichiseika Color & Chemicals Mfg. Co. Ltd.; and Ukima Colour & Chemicals Mfg. Co. Ltd. Polyamideimide-esterimide heat resistant resin and electric insulating varnish. 4,319,006, Cl. 525-424.000.
Yamaguchi, Hiroshi, to Nissan Motor Co., Ltd. Exhaust gas recirculation control system. 4,318,385, Cl. 123-571.000.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Matsumoto, Hiromitsu, 4,318,380, Cl. 123-432.000.
Yamamoto, Fumihiko; Katayose, Mitsuru; Tanaka, Kyugo; and Misumi, Teruyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Pigment reaction products of 3-imino-isoindoline-1-one with aromatic diisocyanate compounds. 4,318,850, Cl. 260-152.000.
Yamamoto, Heihachiro. Coupling apparatuses. 4,318,629, Cl. 403-297.000.
Yamamoto, Hirohito: *See*—
Nakai, Hideharu; Kai, Isao; and Yamamoto, Hirohito, 4,319,155, Cl. 310-316.000.
Yamamoto, Hisao: *See*—
Atsumi, Toshio; Takebayashi, Yoshiaki; Fukui, Masaru; and Yamamoto, Hisao, 4,318,925, Cl. 424-324.000.
Yamamoto, Kenji: *See*—
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Yamamoto, Toshiyuki: *See*—
Hamazaki, Yasuhiko; Ishiyama, Nobuo; Yamamoto, Toshiyuki; Seri, Kenji; and Sato, Reiko, 4,318,923, Cl. 424-309.000.
Yamamura, Yuji: *See*—
Sato, Koji; Koyatsu, Osamu; Okitsu, Takumi; Harada, Yoshio; and Yamamura, Yuji, 4,318,276, Cl. 62-126.000.
Yamanaka, Akira; and Imura, Toshinori, to Minolta Camera Kabushiki Kaisha. Device for indicating the ready condition of an electronic flash device. 4,318,602, Cl. 354-128.000.
Yamataka, Syuichi: *See*—
Ando, Kunio; Saito, Takemi; Toyama, Seiji; and Yamataka, Syuichi, 4,318,584, Cl. 350-10.000.
Yamazaki, Takeo; and Miyoshi, Tadahiko, to Hitachi, Ltd. Non-linear resistor and process for producing same. 4,319,215, Cl. 338-21.000.
Yan, Man F.: *See*—
Rhodes, Warren W.; and Yan, Man F., 4,318,995, Cl. 501-1.000.
Yanshevsky, Vladimir A.: *See*—
Styskin, Evgeny L.; Gurvich, Yakov A.; Kumok, Simona T.; Starikova, Olga F.; Rutman, Grigory I.; Michurov, Jury I.; Yanshevsky, Vladimir A.; Gusev, Vladimir K.; and Liakumovich, Alexandr G., 4,319,052, Cl. 568-727.000.
Yaste, Ruth E.; and Budrow, Russell B., to TRW Inc. Void-free electrical conductor for power cables and process for making same. 4,319,074, Cl. 174-116.000.
Yasuhara, Seishi, to Nissan Motor Co., Ltd. Preheating system for a diesel engine. 4,318,374, Cl. 123-179.0BG.
Yazawa, Chihiro: *See*—
Mori, Kogoro; Ohi, Hideo; and Yazawa, Chihiro, 4,318,730, Cl. 71-67.000.
Yessian, Richard J.: *See*—
Dow, John, Jr.; Oetting, William A.; Yessian, Richard J.; and Brady, Thomas J., 4,319,128, Cl. 235-61.0PD.
Yokocho, Yoetsu: *See*—
Satoh, Masatoshi; and Yokocho, Yoetsu, 4,318,203, Cl. 15-344.000.
Yokomizo, Hiroshi: *See*—
Nishizawa, Masahiro; Miura, Kiyoshi; Yokomizo, Hiroshi; Sasaya, Osamu; Morishita, Hajime; and Uchino, Shoichi, 4,318,971, Cl. 430-28.000.
Yokoo, Kenta; Kishimoto, Tomio; and Sato, Yuichi, to Nippon Telegraph & Telephone Public Corporation. Apparatus for detecting X and Y coordinates of input points. 4,319,078, Cl. 178-18.000.
Yoneoka, Mikio, to Mitsubishi Gas Chemical Company, Inc. Process for producing methyl formate. 4,319,037, Cl. 560-239.000.

Yoo, Jin S., to Atlantic Richfield Company. Combination of aluminum and phosphorus passivation process. 4,318,799, Cl. 208-114.000.

Yoshida, Toshio, to Kawasaki Jukogyo Kabushiki Kaisha. Method of producing clad steel materials. 4,319,121, Cl. 219-121.0ED.

Yoshimura, Kunimasa: *See*—
Nohira, Hidetaka; Yoshimura, Kunimasa; and Ugajin, Mitsuyuki, 4,318,273, Cl. 60-611.000.

Yoshinari, Shigeru: *See*—
Suzuki, Nobuyoshi; and Yoshinari, Shigeru, 4,318,885, Cl. 422-68.000.

Yoshitomi Pharmaceutical Industries, Ltd.: *See*—
Suenobu, Koreyoshi; Kaku, Eizaburo; and Miura, Takanori, 4,319,051, Cl. 568-720.000.

Yoshitoshi, Makoto: *See*—
Naganawa, Tatsuhiro; Yoshitoshi, Makoto; and Kato, Kunihiro, 4,319,094, Cl. 179-77.000.

Yoshiwara, Seishiro; and Higashiyama, Hirokichi, to Nippon Steel Corporation. Method of manufacturing seamless metal pipes and tubes. 4,318,294, Cl. 72-370.000.

Yoshiyasu, Mitsuo: *See*—
Takashi, Masanori; and Yoshiyasu, Mitsuo, 4,318,950, Cl. 428-143.000.

Young, Peter L.: *See*—
Borrelli, Nicholas F.; and Young, Peter L., 4,318,978, Cl. 430-346.000.

Yquel, Jean-Pierre: *See*—
Zaffran, Christian; Ser, Jean-Claude; and Yquel, Jean-Pierre, 4,318,297, Cl. 73-78.000.

Yunker, Mark J.: *See*—
Letton, James C.; and Yunker, Mark J., 4,318,818, Cl. 252-174.120.

Zabrocki, Karl; Schulze, Hans; Weider, Franz; Wellner, Wolfgang; and Schartau, Wolfgang, to Bayer Aktiengesellschaft. Aqueous dispersions of epoxide compounds. 4,318,832, Cl. 523-402.000.

Zaffran, Christian; Ser, Jean-Claude; and Yquel, Jean-Pierre, to L'Oreal. Pendulum-type film hardness measurement tester. 4,318,297, Cl. 73-78.000.

Zagadarchuk, Vasily F.: *See*—
Kuchuk-Yatsenko, Sergei I.; Kazymov, Boris I.; Zagadarchuk, Vasily F.; Solodovnikov, Sergei A.; and Sakharnov, Vasily A., 4,319,117, Cl. 219-100.000.

Zahn, Irwin; and Meyer, Heinrich F., to General Staple Company, Inc. Autopin machine. 4,318,964, Cl. 428-572.000.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Aoyagi, Takaaki; Takeuchi, Tomio; and Inui, Taiji, 4,318,847, Cl. 260-112.50R.

Zbinden, Alain: *See*—
Decroix, Victor; Funk, Burkhard; Massonnet, Albert; Weber, Hansjorg; and Zbinden, Alain, 4,319,104, Cl. 200-147.00R.

Zeidler, Guenter; Oestreich, Ulrich; and Schoeber, Gernot, to Siemens Aktiengesellschaft. Optical communication cable having a reinforced casing. 4,318,588, Cl. 350-96.230.

Zellweger Uster Ltd.: *See*—
Mehnert, Walter, 4,319,332, Cl. 364-516.000.
Morf, Richard, 4,318,299, Cl. 73-160.000.

Zenith Radio Corporation: *See*—
Tanaka, Akio, 4,319,275, Cl. 358-154.000.

Zerbe, Lowell B., to Nonnemann, Earl. Apparatus for assembling trophies. 4,318,317, Cl. 81-467.000.

Ziller, Josef, to Schenk-Filterbau Gesellschaft mit beschrankter Haftung. Kettle filter. 4,318,811, Cl. 210-232.000.

Zimmerman, Clarence E., to President and Fellows of Harvard College. Percutaneous vascular access portal and catheter. 4,318,401, Cl. 128-214.00R.

Zimmermann, Hans: *See*—
Nagel, Hartmut; Zimmermann, Hans; and Pieper, Fritz, 4,318,541, Cl. 271-222.000.

Zimmermann, Werner: *See*—
Schiemichen, Peter; and Zimmermann, Werner, 4,318,640, Cl. 405-199.000.

Zlatkis, Anatoly M.: *See*—
Kulakov, Valery V.; Judin, Valentin P.; Pavlova, Antonina I.; Zlatkis, Anatoly M.; Bagrov, Georgy N.; Zverev, Ivan I.; Khazanov, Iosif I.; Suvorov, Alexei V.; Bobrinsky, Alexei A.; and Pasynkov, Vladimir A., 4,318,955, Cl. 428-235.000.

Znidaric, Kruno. Vehicle for loading and transporting heavyweight objects in particular automotive vehicles. 4,318,657, Cl. 414-478.000.

Zuech, Ernest A.: *See*—
Heckelsberg, Louis F.; Nelson, William T.; Schiff, Sidney; and Zuech, Ernest A., 4,319,064, Cl. 585-10.000.

Zurcher, Jean: *See*—
Gilloire, Andre; and Zurcher, Jean, 4,319,082, Cl. 179-1.0SA.

Zverev, Ivan I.: *See*—
Kulakov, Valery V.; Judin, Valentin P.; Pavlova, Antonina I.; Zlatkis, Anatoly M.; Bagrov, Georgy N.; Zverev, Ivan I.; Khazanov, Iosif I.; Suvorov, Alexei V.; Bobrinsky, Alexei A.; and Pasynkov, Vladimir A., 4,318,955, Cl. 428-235.000.

Zwillich, Alexander: *See*—
Eberhart, Clem W.; and Zwillich, Alexander, 4,319,313, Cl. 362-370.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF MARCH, 1982

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Armbruster, Frederick C., to Grain Processing Corporation. Low D.E. starch conversion products. Re. 30,880, Cl. 435-99.000.

Ayers, Maurice D., to Metal Innovations, Inc. Method for producing low oxide metal powders. Re. 30,879, Cl. 264-11.000.

Clawson, Bert G.: *See*—
Segerson, James M.; and Clawson, Bert G., Re. 30,877, Cl. 244-155.00R.

Grain Processing Corporation: *See*—
Armbruster, Frederick C., Re. 30,880, Cl. 435-99.000.

Metal Innovations, Inc.: *See*—
Ayers, Maurice D., Re. 30,879, Cl. 264-11.000.

Pitney Bowes Inc.: *See*—
Wakeman, William G., Re. 30,878, Cl. 355-75.000.

Segerson, James M.; and Clawson, Bert G. Mechanism for releasably attaching an object to a kite. Re. 30,877, Cl. 244-155.00R.

Wakeman, William G., to Pitney Bowes Inc. Copying apparatus cover. Re. 30,878, Cl. 355-75.000.

LIST OF DESIGN PATENTEES

A. Richard Ltd.: *See*—
Gregoire, Bernard, 263,277, Cl. D8-99.000.

AB Karlshamns Plastindustri: *See*—
Sundin, Harry, 263,341, Cl. D28-37.000.

AB Sture Ljungdahl: *See*—
Petersson, Nils E., 263,315, Cl. D19-3.000.

Abbott Laboratories: *See*—
Bujan, Albert F., 263,335, Cl. D24-8.000.

Allshouse, Roger S.; and Marek, Donald C., to International Harvester Company. Sectionalized panel and cowl for covering a windshield. 263,303, 3-9-82, Cl. D15-28.000.

American Home Products Corporation: *See*—
Ronayne, Walter M., 263,283, Cl. D9-449.000.

Avon Products, Inc.: *See*—
Smith, Douglas B., 263,281, Cl. D9-377.000.

B & W Metals Company, Inc.: *See*—
Barnhill, Donald R., 263,263, Cl. D6-146.000.
Barnhill, Donald R., 263,305, Cl. D15-104.000.

Baker, Allister L., to Keuffel & Esser Company. Controlled lettering scriber. 263,316, 3-9-82, Cl. D19-41.000.

Barnhill, Donald R., to B & W Metals Company, Inc. Combined rotating cafeteria type food service counter and cap. 263,263, 3-9-82, Cl. D6-146.000.

Barnhill, Donald R., to B&W Metals Company, Inc. Pressure cooker. 263,305, 3-9-82, Cl. D15-104.000.

Blanchard, Russell O.; Guzek, Joseph; and Matt, Donald A., to Motor Wheel Corporation. Wheel. 263,296, 3-9-82, Cl. D12-209.000.

Boyle, William: *See*—
Shulec, Jerome D.; Boyle, William; and Motyl, Kenneth J., 263,306, Cl. D15-124.000.

Brooks, Arthur J.; Hodlewsky, William G.; and Schroeder, Roger H., to Rexnord Inc. Chain link for a conveyor chain. 263,292, 3-9-82, Cl. D34-29.000.

Brown, Richard G., to Null Manufacturing Corporation. Table. 263,266, 3-9-82, Cl. D6-177.000.

Brown, Richard G., to Null Manufacturing Corporation. Table. 263,267, 3-9-82, Cl. D6-177.000.

Brunswick Corporation: *See*—
Kaugars, Eugene; and Ossola, George A., 263,330, Cl. D21-221.000.

Budnovitch, William F.; Petralia, Salvatore C.; and Silvestris, Louis F., to Keene Corporation. Garden light fixture. 263,340, 3-9-82, Cl. D26-67.000.

Bujan, Albert F., to Abbott Laboratories. Flow control device, or the like. 263,335, 3-9-82, Cl. D24-8.000.

Butterfield, Ted L., to Spraying Systems Company. Bracket for supporting a sprinkler head. 263,332, 3-9-82, Cl. D23-45.000.

Caldwell, Thomas M., to Natmar, Inc. Marking machine. 263,314, 3-9-82, Cl. D18-13.000.

Carey, Harry R.: *See*—
Toohil, James J.; and Carey, Harry R., 263,278, Cl. D8-331.000.

Champion International Corporation: *See*—
Tellman, Stephen J., 263,339, Cl. D25-85.000.

Chartwell Corporation: *See*—
Rein, Walter C., 263,268, Cl. D7-37.000.

Chase Manhattan Bank, The: *See*—
McCarthy, Michael; Vieyra, Paul; Feldman, Henry; Murphy, John; and Kaminski, Michael, 263,344, Cl. D99-28.000.

Clayton, Lorne F. Hockey goal-tender's stick. 263,329, 3-9-82, Cl. D21-210.000.

Collins, J. Ray. Paint mixer for mixing cylindrical cans of paint. 263,307, 3-9-82, Cl. D15-147.000.

Cooper, Marvin, to Dynamic Classics, Ltd. Jump rope. 263,326, 3-9-82, Cl. D21-191.000.

Cooper, Marvin, to Dynamic Classics, Ltd. Exercise bar. 263,327, 3-9-82, Cl. D21-191.000.

Cooper, Marvin, to Dynamic Classics, Ltd. Adjustable chest expander exerciser. 263,328, 3-9-82, Cl. D21-198.000.

Cotey, John; Evans, Russell W.; and Evans, Ralph M. Dispenser and applicator apparatus for wrapping of stained glass with foil. 263,309, 3-9-82, Cl. D15-199.000.

D'Amour, Ludger. Anvil. 263,275, 3-9-82, Cl. D8-46.000.

Davco Chemicals & Plastics: *See*—
Hart, Richard E., 263,337, Cl. D24-62.000.

Donohue, Michael J. Firebox intake door. 263,333, 3-9-82, Cl. D23-128.000.

Doug Nash Equipment & Engineering, Inc.: *See*—
Miller, George F., 263,308, Cl. D15-148.000.

Douglas, Thomas E.; and Wooten, Edward D., to Zarn, Inc. Wood storage bin. 263,273, 3-9-82, Cl. D7-212.000.

Dynamic Classics, Ltd.: *See*—
Cooper, Marvin, 263,326, Cl. D21-191.000.
Cooper, Marvin, 263,327, Cl. D21-191.000.
Cooper, Marvin, 263,328, Cl. D21-198.000.

Eastern Electrical Equipment Co., Inc.: *See*—
Shuman, Bernard E., 263,319, Cl. D20-40.000.

Electric Fuel Propulsion Corp.: *See*—
Lauve, Henry D., 263,295, Cl. D12-187.000.

Errigo, John A. Necklace. 263,288, 3-9-82, Cl. D11-8.000.

Evans, Ralph M.: *See*—
Cotey, John; Evans, Russell W.; and Evans, Ralph M., 263,309, Cl. D15-199.000.

Evans, Russell W.: *See*—
Cotey, John; Evans, Russell W.; and Evans, Ralph M., 263,309, Cl. D15-199.000.

Feldman, Henry: *See*—
McCarthy, Michael; Vieyra, Paul; Feldman, Henry; Murphy, John; and Kaminski, Michael, 263,344, Cl. D99-28.000.

Four Star Corporation: *See*—
Mareydt, Ray G., 263,280, Cl. D8-382.000.

Gardisette International AG: *See*—
Stocker, Hans, 263,342, Cl. D92-1.0PP.
Stocker, Hans, 263,343, Cl. D92-1.00K.

General Motors Corporation: *See*—
Maxeiner, James E., 263,287, Cl. D10-111.000.

George, James R.; and Schuyler, William L. Combined telephone booth and advertising display unit. 263,264, 3-9-82, Cl. D6-157.000.

Globol-Werk GmbH: *See*—
Schimanski, Georg, 263,334, Cl. D23-150.000.

Godbout, Normand A. Aerial toy. 263,322, 3-9-82, Cl. D21-88.000.

Goto, Tetuya, to Ricoh Company, Ltd. Electrostatic copier. 263,311, 3-9-82, Cl. D16-30.000.
Gregoire, Bernard, to A. Richard Ltd. Knife with breakable blades. 263,277, 3-9-82, Cl. D8-99.000.
Guzek, Joseph: *See*—
Blanchard, Russell O.; Guzek, Joseph; and Matt, Donald A., 263,296, Cl. D12-209.000.
Haak, Larry C. Building for lubricating and oil servicing of automotive vehicles. 263,338, 3-9-82, Cl. D25-25.000.
Hart, Richard E., to Davco Chemicals & Plastics. Oxygen humidifier. 263,337, 3-9-82, Cl. D24-62.000.
Hastings, Basil J., to T. Williams (Drop Forgings & Tools) Limited. Torque applying tool. 263,274, 3-9-82, Cl. D8-18.000.
Heil, Edward K., to U.S. Industries Inc. (Rau Fastener div.). Pants fastener element. 263,260, 3-9-82, Cl. D2-405.000.
Henley, Eugene P., Jr. Dresser. 263,265, 3-9-82, Cl. D6-164.000.
Hodlewsky, William G.: *See*—
Brooks, Arthur J.; Hodlewsky, William G.; and Schroeder, Roger H., 263,292, Cl. D34-29.000.
Interelectronics Corporation: *See*—
Pintell, Robert H., 263,297, Cl. D13-12.000.
International Harvester Company: *See*—
Allshouse, Roger S.; and Marek, Donald C., 263,303, Cl. D15-28.000.
Jacobs, Bruce E. Pendent enclosure for electrical devices such as push button switches. 263,299, 3-9-82, Cl. D13-38.000.
Jacobson, George G., to Northwest Containers, Inc. Bottle. 263,282, 3-9-82, Cl. D9-404.000.
Jagger, Peter C., to Little People Limited. Fork. 263,272, 3-9-82, Cl. D7-137.000.
Janson, Paul M. Auxiliary bar for attachment to a bicycle handle bar. 263,293, 3-9-82, Cl. D12-178.000.
Johnson, John P.: *See*—
Simpson, Danny E.; Johnson, John P.; and Williams, David M., 263,323, Cl. D21-107.000.
Johnson & Johnson Baby Products Company: *See*—
Simpson, Danny E.; Johnson, John P.; and Williams, David M., 263,323, Cl. D21-107.000.
Kalb, Robert M. Flavor injector for foods. 263,271, 3-9-82, Cl. D7-106.000.
Kaminski, Michael: *See*—
McCarthy, Michael; Vieyra, Paul; Feldman, Henry; Murphy, John; and Kaminski, Michael, 263,344, Cl. D99-28.000.
Kanaoki, Shinichi. Toy folding firetruck. 263,325, 3-9-82, Cl. D21-128.000.
Kaplus, Robert J.; and Marchetti, Vincent. Grill for a van window. 263,294, 3-9-82, Cl. D12-183.000.
Kato, Takaharu, to Ricoh Company, Ltd. Single lens reflex camera. 263,310, 3-9-82, Cl. D16-8.000.
Kaugars, Eugene; and Ossola, George A., to Brunswick Corporation. Golf club shaft. 263,330, 3-9-82, Cl. D21-221.000.
Keene Corporation: *See*—
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Keuffel & Esser Company: *See*—
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Lauve, Henry D., to Electric Fuel Propulsion Corp. Automotive rear view mirror or similar article. 263,295, 3-9-82, Cl. D12-187.000.
Little People Limited: *See*—
Jagger, Peter C., 263,272, Cl. D7-137.000.
Magic Dragon Enterprises: *See*—
Strathman, Arthur, 263,285, Cl. D10-90.000.
Marchetti, Vincent: *See*—
Kaplus, Robert J.; and Marchetti, Vincent, 263,294, Cl. D12-183.000.
Marek, Donald C.: *See*—
Allshouse, Roger S.; and Marek, Donald C., 263,303, Cl. D15-28.000.
Mareydt, Ray G., to Four Star Corporation. Transversely positionable tie-down bracket for an article carrier. 263,280, 3-9-82, Cl. D8-382.000.
Matt, Donald A.: *See*—
Blanchard, Russell O.; Guzek, Joseph; and Matt, Donald A., 263,296, Cl. D12-209.000.
Maxeiner, James E., to General Motors Corporation. Combination reflector and lens. 263,287, 3-9-82, Cl. D10-111.000.
McCarthy, Michael; Vieyra, Paul; Feldman, Henry; Murphy, John; and Kaminski, Michael, to Chase Manhattan Bank, The. Teller machine wall unit or the like. 263,344, 3-9-82, Cl. D99-28.000.
McEntee, John. Design for a clock. 263,284, 3-9-82, Cl. D10-6.000.
McEvoy, Charles R. Boat planing inducing attachment for marine outboard motors and marine inboard/outboard power units. 263,301, 3-9-82, Cl. D15-4.000.
Mikami, Masatoshi: *See*—
Onoue, Yasuyoshi; and Mikami, Masatoshi, 263,289, Cl. D11-30.000.
Miller, George F., to Doug Nash Equipment & Engineering, Inc. Four-wheel drive transfer case shaft extender. 263,308, 3-9-82, Cl. D15-148.000.
Motor Wheel Corporation: *See*—
Blanchard, Russell O.; Guzek, Joseph; and Matt, Donald A., 263,296, Cl. D12-209.000.
Motyl, Kenneth J.: *See*—
Shulec, Jerome D.; Boyle, William; and Motyl, Kenneth J., 263,306, Cl. D15-124.000.
Muir, James H., to Video Turf Incorporated. Two player video gambling machine. 263,320, 3-9-82, Cl. D21-13.000.
Muir, James H., to Video Turf Incorporated. Eight player video gambling machine. 263,321, 3-9-82, Cl. D21-13.000.
Murphy, John: *See*—
McCarthy, Michael; Vieyra, Paul; Feldman, Henry; Murphy, John; and Kaminski, Michael, 263,344, Cl. D99-28.000.
Nakade, Kenichi, to Ricoh Company, Ltd. Electrostatic copier. 263,312, 3-9-82, Cl. D16-31.000.
Natmar, Inc.: *See*—
Caldwell, Thomas M., 263,314, Cl. D18-13.000.
Nielsen, Irene L. Combination obstetrical support and receptacle. 263,336, 3-9-82, Cl. D24-56.000.
Northwest Containers, Inc.: *See*—
Jacobson, George G., 263,282, Cl. D9-404.000.
Null Manufacturing Corporation: *See*—
Brown, Richard G., 263,266, Cl. D6-177.000.
Brown, Richard G., 263,267, Cl. D6-177.000.
Oka, Shigeo, to Pentel Kabushiki Kaisha. Pen or similar article. 263,318, 3-9-82, Cl. D19-51.000.
Onoue, Yasuyoshi; and Mikami, Masatoshi, to Ricoh Company, Ltd. Electrostatic copier. 263,289, 3-9-82, Cl. D11-30.000.
Orenstein, Henry. Toy construction piece. 263,324, 3-9-82, Cl. D21-108.000.
Orion Machinery Co., Ltd.: *See*—
Terajima, Teruo; Tagawa, Kiyoshi; and Takeuchi, Ikuo, 263,302, Cl. D15-7.000.
Ossola, George A.: *See*—
Kaugars, Eugene; and Ossola, George A., 263,330, Cl. D21-221.000.
Parker, William G., to Wilson & Scott (Highways) Ltd. Spray nozzle body. 263,331, 3-9-82, Cl. D23-35.000.
Paton, Frederick W. Trough for planters or the like. 263,291, 3-9-82, Cl. D11-143.000.
Pauty, Bernard, to SEB S.A. Pressure cooker. 263,270, 3-9-82, Cl. D7-86.000.
Payne, Harris F.: *See*—
Proctor, Robert H.; Payne, Harris F.; and Powell, Franklin W., 263,298, Cl. D13-32.000.
Pentel Kabushiki Kaisha: *See*—
Oka, Shigeo, 263,318, Cl. D19-51.000.
Petersson, Nils E., to AB Sture Ljungdahl. Three section envelope blank. 263,315, 3-9-82, Cl. D19-3.000.
Petralia, Salvatore C.: *See*—
Budnovitch, William F.; Petralia, Salvatore C.; and Silvestris, Louis F., 263,340, Cl. D26-67.000.
Pintell, Robert H., to Interelectronics Corporation. In-line lamp dimmer. 263,297, 3-9-82, Cl. D13-12.000.
Powell, Franklin W.: *See*—
Proctor, Robert H.; Payne, Harris F.; and Powell, Franklin W., 263,298, Cl. D13-32.000.
Presto Lock Company, Division of Walter Kidde & Company, Inc.: *See*—
Stolarz, Edward M., 263,279, Cl. D8-338.000.
Proctor, Robert H.; Payne, Harris F.; and Powell, Franklin W., to Texstar Corporation, The. Steering column mounted control switch. 263,298, 3-9-82, Cl. D13-32.000.
Rein, Walter C., to Chartwell Corporation. Oven heated tray. 263,268, 3-9-82, Cl. D7-37.000.
Rexnord Inc.: *See*—
Brooks, Arthur J.; Hodlewsky, William G.; and Schroeder, Roger H., 263,292, Cl. D34-29.000.
Ricoh Company, Ltd.: *See*—
Goto, Tetuya, 263,311, Cl. D16-30.000.
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Roger R. Sullivan, Inc.: *See*—
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Ronayne, Walter M., to American Home Products Corporation. Dispensing cap. 263,283, 3-9-82, Cl. D9-449.000.
Rudd International Corporation: *See*—
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Russell, Robert W. Skin for vacuum sweeper. 263,304, 3-9-82, Cl. D32-31.000.
Rutter, Sheldon, to Roger R. Sullivan, Inc. Audio-visual center. 263,261, 3-9-82, Cl. D6-42.000.
Schimanski, Georg, to Globol-Werk GmbH. Air freshener. 263,334, 3-9-82, Cl. D23-150.000.
Schroeder, Roger H.: *See*—
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Shulec, Jerome D.; Boyle, William; and Motyl, Kenneth J., to Trinity Tool Company. Dry blast cabinet. 263,306, 3-9-82, Cl. D15-124.000.

Shuman, Bernard E., to Eastern Electrical Equipment Co., Inc. Display card holder. 263,319, 3-9-82, Cl. D20-40.000.
Silvestris, Louis F.: *See*—
Budnovitch, William F.; Petralia, Salvatore C.; and Silvestris, Louis F., 263,340, Cl. D26-67.000.
Simpson, Danny E.; Johnson, John P.; and Williams, David M., to Johnson & Johnson Baby Products Company. Combined puzzle and contruction toy. 263,323, 3-9-82, Cl. D21-107.000.
Smith, Douglas B., to Avon Products, Inc. Perfume bottle. 263,281, 3-9-82, Cl. D9-377.000.
Sorensen, Johnny: *See*—
Thygesen, Rud; and Sorensen, Johnny, 263,262, Cl. D6-66.000.
Spraying Systems Company: *See*—
Butterfield, Ted L., 263,332, Cl. D23-45.000.
Stocker, Hans, to Gardisette International AG. Curtain material. 263,342, 3-9-82, Cl. D92-1.0PP.
Stocker, Hans, to Gardisette International AG. Curtain material. 263,343, 3-9-82, Cl. D92-1.00K.
Stolarz, Edward M., to Presto Lock Company, Division of Walter Kidde & Company, Inc. Combination lock. 263,279, 3-9-82, Cl. D8-338.000.
Strathman, Arthur. Shaker for separating seeds. 263,269, 3-9-82, Cl. D7-47.000.
Strathman, Arthur, to Magic Dragon Enterprises. Weight scale. 263,285, 3-9-82, Cl. D10-90.000.
Strathman, Arthur. Beam scale. 263,286, 3-9-82, Cl. D10-90.000.
Sundin, Harry, to AB Karlshamns Plastindustri. Curler. 263,341, 3-9-82, Cl. D28-37.000.
Swensson, Torsten. Pen. 263,317, 3-9-82, Cl. D19-46.000.
T. Williams (Drop Forgings & Tools) Limited: *See*—
Hastings, Basil J., 263,274, Cl. D8-18.000.
Tagawa, Kiyoshi: *See*—
Terajima, Teruo; Tagawa, Kiyoshi; and Takeuchi, Ikuo, 263,302, Cl. D15-7.000.
Takagi, Reiji. Letter opener. 263,276, 3-9-82, Cl. D8-61.000.
Takeuchi, Ikuo: *See*—
Terajima, Teruo; Tagawa, Kiyoshi; and Takeuchi, Ikuo, 263,302, Cl. D15-7.000.
Tellman, Stephen J., to Champion International Corporation. Wall paneling. 263,339, 3-9-82, Cl. D25-85.000.
Terajima, Teruo; Tagawa, Kiyoshi; and Takeuchi, Ikuo, to Orion Machinery Co., Ltd. Vacuum pump. 263,302, 3-9-82, Cl. D15-7.000.
Texstar Corporation, The: *See*—
Proctor, Robert H.; Payne, Harris F.; and Powell, Franklin W., 263,298, Cl. D13-32.000.
Thygesen, Rud; and Sorensen, Johnny, to Rudd International Corporation. Chair. 263,262, 3-9-82, Cl. D6-66.000.
Toohil, James J.; and Carey, Harry R. Safety lock for windows. 263,278, 3-9-82, Cl. D8-331.000.
Trinity Tool Company: *See*—
Shulec, Jerome D.; Boyle, William; and Motyl, Kenneth J., 263,306, Cl. D15-124.000.
Troyer, Thelma B. Christmas festoon or similar article. 263,290, 3-9-82, Cl. D11-119.000.
U.S. Industries Inc. (Rau Fastener div.): *See*—
Heil, Edward K., 263,260, Cl. D2-405.000.
U.S. Philips Corporation: *See*—
Waagen, Jozef J., 263,300, Cl. D14-3.000.
VEB Pentacon Dresden Kamera-und Kinowerke: *See*—
Voigt, Reinhard; and Zeibig, Siegfried, 263,313, Cl. D16-38.000.
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Muir, James H., 263,320, Cl. D21-13.000.
Muir, James H., 263,321, Cl. D21-13.000.
Vieyra, Paul: *See*—
McCarthy, Michael; Vieyra, Paul; Feldman, Henry; Murphy, John; and Kaminski, Michael, 263,344, Cl. D99-28.000.
Voigt, Reinhard; and Zeibig, Siegfried, to VEB Pentacon Dresden Kamera-und Kinowerke. Photographic close up setting apparatus. 263,313, 3-9-82, Cl. D16-38.000.
Waagen, Jozef J., to U.S. Philips Corporation. Dictating machine. 263,300, 3-9-82, Cl. D14-3.000.
Williams, David M.: *See*—
Simpson, Danny E.; Johnson, John P.; and Williams, David M., 263,323, Cl. D21-107.000.
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Parker, William G., 263,331, Cl. D23-35.000.
Wooten, Edward D.: *See*—
Douglas, Thomas E.; and Wooten, Edward D., 263,273, Cl. D7-212.000.
Zarn, Inc.: *See*—
Douglas, Thomas E.; and Wooten, Edward D., 263,273, Cl. D7-212.000.
Zeibig, Siegfried: *See*—
Voigt, Reinhard; and Zeibig, Siegfried, 263,313, Cl. D16-38.000.

LIST OF PLANT PATENTEES

Pan-American Plant Company: *See*—
Shoesmith, Leonard H., 4,829, Cl. 76.000.
Shoesmith, Leonard H., to Pan-American Plant Company. Chrysanthemum named Rocket. 4,829, 3-9-82, Cl. 76.000.

CLASSIFICATION OF PATENTS

ISSUED MARCH 9, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

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271 4,318,494
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CLASS 236

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CLASS 239

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CLASS 241

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CLASS 242

75.53 4,318,513
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CLASS 244

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155 R Re.30,877
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405.5 4,318,860
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CLASS 294

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516	4,319,332
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25	4,318,620
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110	4,318,622
144	4,318,623
349	4,318,624
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94	4,319,349
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253	4,318,775
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89	4,318,903
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230	4,318,907
243	4,318,908
244	4,318,909
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249	4,318,911
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	4,318,914
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	4,318,917
275	4,318,918
278	4,318,919
304	4,318,920
	4,318,921
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330	4,318,926
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392	4,318,681
411	4,318,682
429	4,318,683
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75	4,318,938
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213	4,318,942
240	4,318,943
377	4,318,944
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36	4,318,947
68	4,318,948
91	4,318,949
143	4,318,950
167	4,318,951
172	4,318,952
200	4,318,953
209	4,318,954
235	4,318,955
265	4,318,956
295	4,318,957
332	4,318,958
364	4,318,959
378	4,318,960
425.9	4,318,961
458	4,318,962
537	4,318,963
572	4,318,964
593	4,318,965
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105	4,318,968
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287	4,318,976
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346	4,318,978
434	4,318,979
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114	4,318,688
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58	4,318,691
	4,318,692
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225	4,318,698
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18	4,318,986
99	Re.30,880
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205	4,318,989
219	4,318,990
245	4,318,991
291	4,318,992
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144	4,318,840
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016	4,319,027
142	4,319,029
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